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It's the best selling weekly

Vol 4 No 34

AMSTRAD 6128 REVIEW INSIDE

Amstrad beats Atari to 256K

AMSTRAD has announced its second new micro in two weeks.

The machine, called the PCW8256, is a home or office word-processing system something of a departure for Amstrad

Based on the technology used in the 6128 the new PCW 8256 offers 256K Ram a Z80 processor and a sophisticated icon-driven word processing software program in a package which includes a single 3 inch disc drive, high-resolution monochrome monitor and near letter-quality dot-matrix printer. The computer, disc unit and much of the printer software is built into the compact monitor unit to keep the keyboard and printer as light as possible

The whole system including the micro monitor disc and printer is to be priced around £450

Unlike Amstrad s previous computers the PCW 8256 s much expanded version of Basic is not built-in Instead it is supplied with the machine on disc and must be soft-loaded

Like the 6128, the micro is CP/M compatible running version 3 0 (CP/M Plus) and is also supplied with Digital Research's GSX graphics extension package.

The micro can also be expanded with an additional 1M 3 inch disc unit a space for which is provided behind a removable panel on the monitor unit

Like the 6128 the 8256 was commissioned from Amstrad by Indescomp Inc primarily for the US market

It will be available shortly in the UK, in the autumn in the rest of Europe, and and launched, according to Jaime Paro, President of Amstrad Computers US in late 1985/ early 1986 in America.

New 16-bit micro from Sinclair?

THE IMMEDIATE future of Sinclair Research was being decided this week as top executives from the troubled computer firm met representatives of its major creditors – owed around £15m to try to agree a short term extension of the company s credit.

Cash is urgently needed to carry through developments of new 8- and 16-bit machines

See page 4

FIRST LOOK

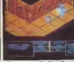


Warlord from Interceptor (Amstrad)



Elite from Firebird (Spectrum)





Wizardry from The Edge (Commodore 64)

INSIDE) SETTING FOOT ON LEVEL 9'S RED MOON   WIN SUMMER GAMES II

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Alan Sugar with Amstrad's PCW8256

EDITORIAL

It is difficult to pick up a paper these days without reading some story on why the micro bubble burst. Commentators who only eighteen months ago championed the micro boom are now busy banging nails into its coffin: micros failed because they were a product in search of an application.

They are all wrong. Yes, it is true that for the moment the micro's only serious home application is word processing; it is also true that the dreams of armchair shopping or the automated home remain unfulfilled.

But the micro has found its role as an entertainment medium. Anyone familiar with programs like *Elite*, *Frankie Goes to Hollywood* or *Dun Darach* would be forced to agree the computer game can be a complex and compelling form of entertainment. As valid a leisure pursuit as reading a book, listening to a record or watching a film.

As the music, publishing, film and now computer industries continue to move closer together an increasing number of artists and authors are beginning to dabble with micros: the list includes Arthur C Clarke, Douglas Adams, Andy Warhol, George Lucas, Rik Mayall, Pierre Boulez. This week book publisher Hodder and Stoughton launched its version of *The Rats* based on James Herbert's top selling novel. Hutchinson's adaptation of *The Fourth Protocol* is still riding high in the software charts.

With technology still advancing fast the micro offers the intriguing possibility of true interactive fiction—combining elements from a book or film so that the reader/viewer can control by decision-making the development and outcome of the story. Pieces of the jig-saw are already in place: startling graphics like those of Terry Greer used in Interceptor's Amstrad adventures and the sophisticated text detail of the Infocom programs. All that's needed now is more memory.

Even if time eventually shows the interactive novel to be a creative cul-de-sac, the prospect is a fascinating one.

Those who are now ready to write off the micro as a spent force will be proved wrong.

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Computer Trade Association Magazine of the Year

First signs of a new QL machine

AS WELL as the much rumoured 128K Spectrum model Sinclair is now known to be working on a new 16-bit machine The new micro is thought to offer 512K Ram and be based on the technology developed for the QL, yet without microdrives A disc option may be provided instead.

Both new micros are likely to be shown for the first time at this year's *Personal Computer World* Show in two week's time Mikro-Gen could be the first company to show software for the new Spectrum the company is already planning a range of titles to launch for its MicroPlus Spectrum Plus expansion system, believed to be compatible with the new micro

MicroPlus looks rather similar to a joystick interface but provides a 8om expansion giving the Spectrum Plus an increased memory size available for a game, thus giving opportunity for more complex graphics or playing area.

The first title on MicroPlus will be *Shadow of the Unicorn*, and Mikro-Gen is also planning a licensed title, *Battle of the Planets*

Triptych Publishing, the company which wrote the Brainpower series, is also thought to be writing specifically for the Spectrum 128 and the Pandora portable

Dixon's, whose £10m order — apparently agreed before the Maxwell take over plan was mooted – was heralded by Sir Clive Sinclair as wiping out the need for a specific rescue deal, has now begun selling its new Spectrum package Spectrum Plus, joystick and interface, data recorder and ten pieces of software for £139.99 in all Dixon's stores Its original package — Spectrum Plus, ZX printer and flat screen TV at £199 99 – is still running while stocks last The discount store Comet is now selling a similar package at £159 99 and discount packages for independent retailers are also expected.

The creditors meeting called on Monday – involving Sinclair and representatives from Thorn EMI Timex, AB Electronics, Barclays and Citibank – follows the failure of Robert Maxwell's £12m rescue bid three weeks ago

Acorn's shares trade again

TRADING in Acorn's shares began again on the Unlisted Securities Market last week Starting at 2½ pence per share, the price rose at the end of the first day to 6 pence, and currently stand at 14½ pence

The deal with Olivetti under which Olivetti's stake in Acorn rises to 79 8 per cent is due to be granted shareholders' approval on September 2

● Acorn's ABC range, which was put in abeyance in February prior to Olivetti's first rescue package has been incorporated in the newly launched Cambridge work station This 32-bit scientific processor draws on much of the technology developed for the ABCs, which are still not being produced as machines in their own right

TWO new releases from The Edge – Fairlight (above) and Wizardry (cover) – are both arcade adventures with the emphasis firmly on 3D graphics and animation.

For the Spectrum and Commodore 64 respectively, both will be released in early September priced at £9 95 Wizardry will also be available for the Commodore 64 on disc at £12 95

Hodder launches horror game

HODDER and Stoughton has now launched *The Rats* the strategy/adventure game based on James Herbert's blood curdling novel

The programmers, from Five Ways Software, have deliberately kept in many elements of the horror and spine chilling description that characterised the novel

The Rats will be available in September, priced at £7 95, for both the Spectrum and Commodore 64 An Amstrad version is planned

Mighty Oaks available from Acorn's BBC

OAK UNIVERSAL and Acorn have signed a deal for Oak to sell the BBC and BBC Plus as single board computers

The Oak range offers all permutations of BBC components and peripherals from the basic keyboard and processor board in Oak's own casing at £498 up to the full Oak personal computer, comprising motherboards for BBC and BBC Plus 85 watt power supply dual 400K double-sided disc drive, Z80 second processor, CP/M word processor, spreadsheet, graphics, database, system generator, CIS Cobol, and BBC Basic for £1,328 The keyboard and processor casings only can be bought for £86 95

Oak has also produced its own modem, which fits internally in the disc drive case, at £135 with software

Details from Oak Universal 20 Crofters Green, Green Lane Idle, Bradford.

Hollywood's worst in Global deal for micros

FOLLOWING the licensing of such box office hits as *Rambo – First Blood 2*, *Alien*, *Superman* and *Gremlins* comes news of a deal involving the worst films ever

Global Software, which was formed in March this year by former employees of Argus Press Software, has obtained software rights to films featured in the cult book *The Golden Turkey Awards*

The book, written by two Californians Harry and Michael Medved, awards 'Golden Turkeys' in categories such as The Most Embarrassing Movie Debut of All Time, or The Worst Vegetable Movie of All Time

The first game in the new series is to be *The Attack of the Mushroom People*, based on The Worst Vegetable Movie of All Time, which is to be released for mid-October for the Spectrum at £6 95 and the Commodore 64 and Amstrad at £7 95 The second game, *Revenge of the Killer Tomatoes*, will follow shortly after

Global has also released a graphics and text adventure called *The Magician's Ball* which features Mike Oldfield's *Tubular Bells* licensed as backing theme.

More news on page 6

MUD slinging in Compunet resolved

FOLLOWING an outcry from Compunet MUD players after all Wizard status points were halved last week, the original rankings have now been reinstated

Players who had attained the powerful Wizard status in the Multi-User Dungeon reacted angrily after MUSE managing director Simon Dally reduced the rankings

We had had a lot of complaints from Compunet MUD users saying that those who had made it to Wizard were making the game extremely difficult for others to play " said Simon

However, the outcry was so violent—some people having spent several hundred pounds reaching the coveted position that MUSE reinstated everyone's previous rankings including those considered to have attained Wizard status by possibly devious means

"The problem was really one of supervision of players," commented Simon 'Now that we can access MUD on a Gateway computer rather than needing a Commodore 64 proper supervision should be a lot easier "

Can you guarantee there isn't a C5 thrown in as well?

Hoover halts C5 – price tumbles

SIR CLIVE Sinclair's personal venture, Sinclair Vehicles, sank into even deeper trouble last week when Hoover stopped production of the C5 electric tricycle at its Merthyr Tydfil factory

'Production has been halted while the £1 5 million writ is still hanging over the company " said a Sinclair Vehicles spokesman "Hoover did not want to buy new parts when they ran out on behalf of Sinclair Vehicles "

Demand however can be met by stocks currently held by Sinclair – production prior to the stoppage was, however, only 100 per week. The writ, for non payment of debts, was taken out by Hoover over a month ago, but has still to be served

The C5 which has only achieved about a tenth of its predicted sales of 100 000 so far has already been heavily discounted Electrical store Comet is selling it at £189, while from Vallance it costs £199 compared with a normal retail price of just over £400

Tolkien spoof reaches shops

BORED of the Rings, the adventure spoof on J R R Tolkien's *Ring* trilogy, is to be released by Silversoft

Originally only available by mail order, publisher Delta 4 Software found itself unable to cope with the demand As part of the Silversoft deal, Silversoft will expand the game adding new locations and graphics

Bored of the Rings will be available by mid September for the Spectrum and BBC at £7 95 Amstrad and QL versions will follow

Letters

Ram paging

I have an XK modification Spectrum – the system of Ram paging allowing 64K blocks of memory to be built up to a maximum of 4M I have not seen any programs or news of any products which use this expansion

I'd be interested in hearing if anyone can help or from anyone else who has the system

K J Turner
41 Almond Grove
Brentford
Middx

Thargoid attack

Re Martin Croft's review of *Elite* (June 20 issue) Who says you can't survive a Thargoid attack? If you feel like trying or just practising on the BBC version (tape or disc) type *Copy X, Delete*, and then galactic hyperspace *(Ctrl-H)*, but hold down *Ctrl* until the routine has finished You will be surrounded by Thargoids in Witch space

This procedure (known as a back door) has been found to work on BBC (tape and disc) It probably works on the Electron as well

A useful bug (BBC disc only) is the following A capital of 1600 credits is necessary Buy a mining laser (NB *not* lazer) on any view then buy another mining laser on the same view The computer will respond with *Laser Present* and your bank account increases in size by 3570 3 credits

Peter Bevin
62 St Denis Road
Selly Oak
Birmingham

There is also a Witch space routine on the C64 version The mining laser 'bug' was only present on early BBC versions and has apparently now been corrected.

Competition

Win Summer Games II

This week *Popular Computing Weekly* gives you the chance to win a copy of *Summer Games II* for the Commodore 64 This superb game recreates, with excellent graphics and sound, eight different Olympic events The game is certain to be a bestseller – this is your chance to get one for nothing We have 25 copies of the game to give away

The Competition

Below are three questions If you think you know the answers fill in the coupon below and send it to *Popular Computing Weekly*, Summer Games Competition, 12-13 Little Newport Street, London WC2H 7PP Closing date is September 13th.

Questions

1) How many gold medals did the UK win in the last summer Olympics?
2) Which city is Britain's nomination to hold the 1992 Olympics?
3) Where were the last Winter Olympics held?

Answers

1) ....
2) ....
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Fighter Pilot Disk £14.95
Fighter Pilot Cassette £9.95
SPECTRUM
Night Gunner 48K £6.95
Fighter Pilot 48K £7.95
AMSTRAD CPC 464
Fighter Pilot £8.95
Fighter Pilot Disk £13.95

Surprise package

***Jeff Naylor** evaluates Amstrad's latest surprise – the 128K 6128 machine now in the shops*

Some manufacturers have a reputation for announcing new machines, then trying to get them working, and finally (or sometimes never) releasing them.

Amstrad doesn't work like that. Its new 6128 was available in some shops two weeks *before* being officially announced.

The micro features a Z80A processor, 128K of memory banked in two 64K blocks, a single built-in 3 inch disc drive and either a colour or monochrome monitor. Depending on the choice of monitor the whole package costs either £399 or £299.

The new CPC 6128 is a logical progression in the series of Z80-based Amstrad machines using and expanding on the same technology developed for the 464.

The original 464 provided Resident System Extensions to allow additional commands to be created. These were used to provide extra disc instructions when the DDI-1 disc unit was added to the system.

The 664 replaced the built-in cassette player with a disc unit and added a debugged Rom (no Line Input bug) and offered a slightly extended version of the 464 basic.

Hardware

Now, only four months after the 664, Amstrad offers the new 6128. It contains an extra 64K of Ram, but the firmware is fully compatible with the 664. Bank switching has always been a feature of the Amstrad as Roms overlay the Ram addresses on the 464, and the 6128 extends the principle to an extra bank of Ram.

The first thing you notice about the 6128 is how neat it looks. It is a lot slimmer than its predecessors, achieved because the disc unit is very compact and also by squeezing the keyboard and function keypad together and reducing the size of some keys. The cursor *Copy* key arrangement has also been altered; *Copy* has moved bottom left alongside a repositioned and enlarged *Control* key, while the cursor keys have been resited at the bottom of the function keypad. It's tempting to quibble about the keyboard changes. I don't like the small *Delete* key (which I'm always using) or the position of the right-hand *Shift*. The latter is sandwiched between *Return* and *Enter*, a duplicity caused by the need to retain the same number of keys as earlier machines. One final moan: all the keys are now the same colour.

Connections to the 6128 offer no surprises: stereo sound, joystick, tape, printer, expansion, power, monitor and disc drive two. Inside the case, a neat circuit-board nestles under the keyboard, but does not extend the full length, despite the extra Ram chips. There is about three inches of space between the board and the disc drive, making the new circuit-board small enough for use in a portable machine. Eight additional 64K Ram chips are used to provide the extra bank of memory. This is enabled through the video gate array in much the same manner as internal Rom selection is achieved. One further cause for speculation is a spare integrated circuit socket which will take a ULA chip . . .

And so to the 65,536 dollar question, asked of all eight-bit computers with more than 64K of Ram. What use is the memory that can't be addressed directly by the CPU?

If programming in Basic, the answer is a complex one, but it boils down to "not a lot". The 6128 uses the same Basic as the 664, so you cannot write bigger programs because the interpreter is unaware of the additional 64K.

Use of the extra memory is instead facilitated by a suite of RSX routines supplied on one of the system discs. Once these are loaded a number of extension commands become available.

Firmware

Bankopen,n sets up the second bank of Ram for string storage, the *n* parameter defines the length of all the strings up to 255 characters. To use the space, commands *Bankwrite*, *Bankread* and *Bankfind* are employed. The whole system operates like a Ramdisc. You may read from or write to either the current record or one specified by an optional parameter, or search the memory for a string matching the one you have specified. In all cases a parameter returns the record number or a negative value if the operation fails.

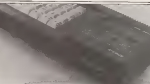
Screenswap and *Screencopy* allow the

continued on page 10 ▶



extra Ram to be used for screen storage, but they do not reprogram the video chip to fetch its video information from elsewhere. All that they do is copy 16K blocks of data in and out of the video Ram area. You may store four additional screens, but displaying them can take half a second.

Machine-code programs will find the extra Ram much more useful, with a firmware call at &BD5B allowing access to the second bank, but in the short term it seems unlikely that software houses will write programs that cannot run on the whole range of Amstrad machines.



Software

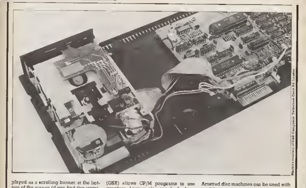
The main justification for the extra Ram is Digital Research's CP/M version 3 (CP/M Plus) which is supplied as standard with the CPC 6128.

Earlier disc-based Amstrad machines run CP/M 2.2, but the video chip requires 16K of the memory map. Therefore the 464 and 664 have only 39K available for transient programs. Some CP/M programs need rewriting in order to run and even then may be slow because of increased disc access.

The 6128 has none of these problems. Its version of CP/M exploits the extra Ram, resulting in a transient program area (TPA) of 61K. CP/M Plus includes a number of other improvements. More meaningful error messages are dis-

continued on page 12 ▶


DOMARK
CODENAME MAT II
by Derek Brewster
MAT



played as a scrolling banner at the bottom of the screen (if you find this irritating you can disable it) Because more of the operating system is stored in Ram, there is no need to 'warm boot' (ie press *Ctrl C*) every time you change discs Although CP/M Plus is much improved earlier CP/M software is easily up-graded, so the vast range of software (including the 'freeware' of the CP/M user s group) is now truly accesible

The CPC 6128 comes with two system discs In addition to CP/M Plus and the Bank Ram Manager RSXs, a host of other goodies are included. The Digital Research Graphics System Extension (GSX) allows CP/M programs to use graphics Logo is also supplied, along with some standard utility programs. Some of the machine-code tools though unfortunately assume that your processor is an Intal 8080 chip, so some have limited uses Amstrad have also included *Disckit3*, a fairly friendly disc formatter and copier, while *Pip* (the file copy program) has been rewritten to work on a single drive system

Just to be safe one side of the system disc contains CP/M 2 2, useful if you upgrade from a 664 or 464 plus disc and want to run your old software

Anything that runs on the other Amstrad disc machines can be used with confidence

If you wish to transfer files from cassette then you will need to use the utilities on this disc which are much the same as those for the 464 disc drive

Amstrad CPC 6128 Specification

Processor	Z80A
Ram:	128K in two 64K switchable banks
Rom:	48K including Locomotive Basic (same version as used by the CPC 664)
Disc (built-in)	Hitachi format 3 inch
Disc operating system	CP/M version 3.1 (CP/M Plus) and AmsDOS plus CP/M version 2.2
Disc software included	Dr Logo, Graphics System Extension (GSX) *Disckit3* disc formatter/copier, *Pip* file copier
Monitor	Choice of colour or monochrome monitor
Display	Max 640 × 200 pixels 20, 40 or 80 column
Sound	3 voice (AY-3-8912 chip)
Connections	Stereo sound, joystick, cassette, printer, general expansion and additional disc drive ports
Prices	£399 (with colour monitor)
	£299 (with monochrome monitor)

Conclusion

Viewed in isolation from other Amstrad computers, the CPC 6128 is a very well designed and manufactured piece of hardware Some of the keyboard features may seem retrograde step to current Amstrad users and the extra memory is not particularly useful to Basic programmers The 6128 is still only a 8-bit machine (a boring Z80 crate according to one commentator)

But each of these points can be countered the restyling has resulted in a more attractive machine the improved CP/M, CP/M Plus, is only possible because of the memory size, and Amstrad must be praised both for the compatibility of their computers and the size of the existing software base

Which leaves the prices computer, disc drive and monitor for £399 in colour, £299 for a green screen

They represent a new step in value-for money The green screen version is only £20 more than Commodore's proposed C128 – and that has neither disc nor monitor As for the BBC B Plus at £499 – no comment

The 6128 is the most attractive new 8-bit micro so far this year The only people who may complain will be those who have just bought an Amstrad 664



Spirited

Program *That's the Spirit* **Micro** Spectrum 48K **Price** £7.95 **Supplier** The Edge, 31 Maiden Lane, Covent Garden, London WC2

In the future all cities won't look like Milton Keynes – they'll look like New York instead. They'll also all be called New York. And spirits will be banned, though thankfully just the ectoplasmic not the alcoholic kind because the game background doesn't make much sense while I'm sober.

Understanding the game itself isn't that easy either. First appearances reveal a pick-things-up-and-find-their-use arcade adventure, but I was stumped until I received a Help sheet.

Once collected you can *Examine* (ie magnify) objects and even *Connect* some of them together to make them work. This is certainly similar to the puzzles that have pleasurably plagued text adventurers, though here there's the added difficulty of actually recognising an artifact from its appearance.

With an operating laser you can start frying the spirits, avoiding contact which will drive you insane. You also need to sleep every so often – tiring work this ghost hunting!

It's a good looking game, in particular in its settings, and there's some nice sound. A multitude of key presses keeps the options open and it's all rather witty – try pressing *Swear* or start up the QL. Whether you call it subtle or merely infuriating will depend on your attitude to the genre.

John Minson

In ore

Program *Nick Faldo Plays the Open* **Micro** Spectrum 48K **Price** £9.95 **Supplier** Argus Press Software, Liberty House, 222 Regent Street, London W1R 7DB

Now the boxers have endorsed sports simulations it's the turn of the golfers and first on to the fairway is Nick Faldo.

I'm not sure how much Nick was concerned with game development but he has provided a booklet on playing the Royal St George's course with its treacherous shifting sea winds.

Golf games consist of choosing the correct club and calculating the angle and force of shot. They were among the earliest programs but Argus has dragged them into the present by improving the graphics with a scrolling view of the course, flying golf ball, and icon control.

Actually these icons are more than a flash accessory and many people will prefer a moving bar for power to 'Enter 1-100'. Judging the angle was always difficult enough without having to convert it to degrees. While taking the shot these can both be fine-tuned. There's also a caddy who informs you if you've chosen the wrong club – useful for non-golfers – and comments, most often sarcastically in my case, on your efforts.

It's all most appealing apart from one near fatal flaw. Without any magnification on the green, putting is extremely difficult and impossible when the ball is near the flag.

Not a hole in one, perhaps, better than par for the course.

John Minson

In motion

Program *Amsprite* **Micro** CPC 464 **Price** £8.95 **Supplier** The Electric Studio, PO Box 96, Luton LU3 2JP

This is the first Sprite graphics package I have seen for the Amstrad computers. It seems to be a reasonable utility, although it has some drawbacks that may make some people want to hang on for the release of something more powerful such as White Lightning. The good points are that the routine takes up very little memory space, up to 40 sprites can be defined at once, the maximum size being 32*48 pixels. The sprites are 'non-destructive' of any information already on screen and you have full control over wraparound, bounce and collision detection. The sprites can be animated in sequence, are smooth and flicker free. The speed of the response is good from Basic as long as you don't have too much happening on screen at once – 40 seperate sprites would be ridiculous.

There is also a very-easy-to-use sprite editor which looks like a large copy of those UDG designing grids, but gives you full control over colour pallettes, allows scrolling, mirroring and reversing of images and can read the information to and from tape or memory.

The drawbacks are that you are restricted to working in mode 0, sprites cannot be defined offscreen and moved on, there appears to be no method of relocating the sprites movement code, and control of sprites from Basic is only achieved by poking a series of memory addresses with data. It is a shame no attempt was made to exploit the ability of the machine to add commands to the Basic itself, making the whole thing more user friendly. The manual is a classic example of why documentation shouldn't be written only by those who know exactly how the program works. It took me ages to work out some points, and I'm sure programming beginners could easily be baffled. The company also seem to have shied away from any mention of where they stand on copyright when games are produced using this utility.

Tony Kendle



Hyde bound

Program *Mad Doctor* **Micro** Commodore 64 **Price** £8.95 **Supplier** Creative Sparks, Thompson House 296 Farnborough Road, Farnborough, Hants

You know all those classic horror movies where the mad scientist steals bodies intent on building a human being out of spare parts, only to be foiled at the last minute by our hero who saves the village from its dreaded threat?

Haven't you thought like me, that just once, wouldn't it be nice if Christopher Lee turned the tables on Peter Cushing and the monster won?

Here's your chance with a very clever arcade adventure game from Creative Sparks called *Mad Doctor*. You are cast as the evil Dr Blockenspiel, who is intent on carrying out his late uncle's legacy of building the ultimate spare-part human. These ghoulish experiments take place in your castle, which, fortunately for you, overlooks a small sleepy village stocked with many potential victims. Using your joystick, you guide your doctor through six areas of the village ranging from the poor sector, and the village dwellings where the pub is to be found, through to the graveyard and the main centre which houses the hospital, a good place for supplies of needle and thread! The plan is to come upon an unsuspecting villager, bash him or her to death and cart off the body to your lab for a quick once over, select a useful appendage and then bury the remains. Choosing the right victim is important, you don't want your monster running around with a screw loose!

Sooner or later, as a result of your little trips, people become suspicious and chase you as soon as you venture out. Using cunning and strategy, and the odd hidden passage, you can outwit the village and realise your manic ambition, but beware choose the wrong parts and your final creation might just turn against you.

Plenty of locations, good 3-D graphics. And just when I though games were getting really wholesome.

Andy Moss

No aid

Program *Biology 1 O-level* **Micro** CPC 464 **Price** £7.95 **Supplier** School Software, Meadowvale, Raheen, Limerick, Ireland

Have you ever wondered why people bother producing programs that simply duplicate the function of a book, but at five times the price?

I suppose that the answer is that using a computer can provide a motivation that a 'boring old book' couldn't do, so I won't play too much on the fact that this program consists of only about 100 text questions that any revision aid book worth its salt will improve upon. However, I will take exception to the fact that the thing has been programmed to carefully exploit all the worst points of a computer – most notably its inability to think. Consider this exchange "Question: what type of soil is very free draining and low in mineral salts?" – my answer is SAND – "Wrong! The correct answer is SANDY".

In order to get over such infuriating drivel, adventure games programmers have had to learn how to develop some quite sophisticated language parsing routines in just a few K. Isn't it about time that education programmers woke up to the fact that our children deserve something just as good, or better? If nothing else there should be a routine that gives a choice of correct answers, recognises slight misspellings and even corrects them, or searches the response for recognised strings within it. It may not work all the time but it would be better than nothing.

LIFE AND CELLS
1 Plants and animals require food and oxygen so that they can carry on the process of RESPIRATION
WELL DONE
PRESS SPACE BAR TO CONTINUE

If you want your children to grow up without the ability to provide imaginative responses to questions, to become obsessed with semantic trivialities or to become so frustrated they never want to see another education program again, then this is the tape for you.

Tony Kendle

Head monitor

Program *Assembler* **Micro** Commodore 64 **Price** £16.95 **Supplier** McGraw-Hill, Shoppenhangers Road, Maidenhead Berks

This is a sophisticated utility program designed to translate standard assembler mnemonics into machine code.

For the experienced programmer it is an essential tool, although I cannot recommend it for the novice, due to the lack of any detailed instructions in the accompanying manual. It is only 14 pages long and assumes that the reader is fully conversant with C64 machine-code.

The assembler has a number of interesting features incorporated in the design to give the programmer an easy life. For example, the source file (assembler Mnemonics) is written in normal Basic lines which means that the Commodores' own powerful text and screen editing system can be used. Also, the unassembled source file can be saved to tape or disc.

Another feature is the ability to run your programs with the assembler still in memory, invaluable when developing software. The assembler can be directed to store the assembled code anywhere in memory thus utilising all available memory space. Both disassembler and assembler can reside in memory simultaneously.

An excellent utility which I can thoroughly recommend. The disappointment is the lack of detail for the novice machine-code programmer.

Andy Moss

Drop dead

Program *Hangman VI* **Micro** Commodore 64 **Price** £7 95 **Supplier** McGraw Hill, Shoppenhangers Road, Maidenhead, Berks SL6 2QL

Yes, it's back to that old favourite, *Hangman* – this time, disguised as an educational program for 11-13 year olds

I'm sure all you intellectuals know how to play Hangman, so I won't bore you with the details Suffice it to say that you only get seven chances to guess the letters before suffering a terrible death on the gallows. There are four levels of play, and the computer holds a bank of 800 words Plenty to keep you busy, but if this isn't enough, you can also enter and save your own list of words And if playing the computer becomes boring, you can always find a friend and give him/her a game just as if you were using a pencil and paper

Hangman VI is certainly a very good program. It's got quite decent graphics and screen layout, and it even plays the odd tune or two. I did manage to crash the program once, though (syntax error line 3766?)

The tape has got plenty of options, I only wish I could get the computer to give me a few clues If you fancy a *Hangman* program and want to learn something as well, you can t really go wrong

Tom Hussey

Magical moon

Program *Red Moon* **Micro** Spectrum 48K **Price** £6 95 **Supplier** Level 9 Computing, PO Box 39, Weston-Super-Mare, Avon BS24 9UR

There have been some excellent *Quilled* adventures, but sadly all too often the ease of this utility has led to feelings of deja vu.

Level 9 uses its own text compression system and, backed up with someone's rich imagination, this has produced a succession of eagerly awaited classics

From the moment this adventure starts, looking out over a sea of grass, your quest to find the Red Moon Crystal begun, there's a feeling of care with a capital Q for Quality It's not just the amount of text, nor the optional pictures that head most locations *Red Moon* is so richly written by David Williamson and Pete Austin that it makes the term interactive novel' seem almost credible Care has also been taken over the internal logic of the Island of Baskalos

The game is rather more than an exercise in object gathering and puzzle solving The *Cast* command allows for magic, though you'll need to find a focus for some spells Iron prevents magic which is an important factor when choosing what to carry, and you have limited strength for spell casting, none of which makes life easy.

Highly recommended

John Minson

Pyramid pest

Program *Abu Simbel Profanation* **Micro** Spectrum 48K **Price** £6 95 **Supplies** Gremlin Graphics Software, Alpha House, 10 Carver Street, Sheffield S1 4FS

Poor old Johnny Jones (from Indianna?) didn't allow for the curses of Ramses II

JJ?) he retired into his pyramid.

Luckily old Ramses was a forward-looking pharaoh and had equipped his home with teleports and hidden doors triggered by hi-tech hieroglyphics Unluckily his attitude to pest control was less advanced and the resting place was quickly overrun with everyday pyramid pests like malevolent mummies, sinister spiders and every day sort of nasty

A plague of locusts? Worse! The handsome hero and two-fisted explorer was transformed to resemble nothing more than a grape with two legs! Afraid that this would ruin his love life (would you like to be caught kissing a smiling, winking grape, even when it's as well animated as

This means that once again we're running left and right and jumping to two heights to collect keys and map a path through the game. Basic arcade adventures of this type need some selling point and in this case it's the beautiful, atmospheric backgrounds and the comical hero who reminds me of *Bugaboo*, the Hispanic flea Coincidentally the *Abu Simbel* title was written for Gremlin by Spanish authors

Set against the backdrop is the excessively reflex testing timing needed to avoid the nasties I'd have preferred strength reduction on contact to instant death for this reason but doubtless one reviewer's impossibility is another player's challenge, and you can't say pharaoh than that

John Minson

Solo

Program *Chinese Patience* **Micro** Spectrum 48K **Price** £1 99 **Supplier** Atlantis, 19 Prebend Street, London N1 8PF

You don't have to be oriental to play *Chinese Patience*, a successor to the highly praised *Nines* card game from the Atlantis budget range

For those unacquainted with this patience variation it's played competitively, the winner being the first player to dispose of all the cards

You do this by placing cards in ascending sequence by suit on one set of piles, or in descending value in alternate colours on another four piles. Strategy comes in the ability to manipulate the second set of piles to open up new runs or, more sadistically, to transfer cards to your opponent's stack under certain circumstances A turn continues until you can no longer discard cards

If this all sounds complex on paper it soon becomes obvious in play and the subtleties of shuffling cards to your best advantage, and your opponent's disadvantage, soon become clear You can play sequences of games and I was soon hooked on attempting to beat my Spectrum.

Here lies the game's main problem though The micro plays rather too well and some will find it dispiriting to be thrashed time after time But it's a very neat implementation at a ludicrously low price.

John Minson

Pandemonia

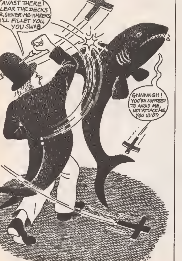
Machine code action on the BBC B from the keyboard of Jeffrey Cooke

In this game, you must move your character around the screen using *A,Z,?,* and */* keys, collecting red objects as they scroll past at lightning speed, avoiding the white crosses. Ten must be collected within the time limit of 20 seconds, or you loose a life.

If you do collect ten, you move onto the next screen (there are 16 in all). On further screens you are pestered by such strange things as wandering fish and stray pixels. Be warned – this one is not easy!

The program is printed in two parts – this week and next, on the BBC page. When run, disc users should first type in *Page=&1100*

If all that code proves to be too daunting, tape copies of the program can be obtained from the author for £2.50. Write to Jeffrey Cooke at 152 Gallagh Park, Londonderry, N. Ireland BT48 8DF.




```
   10 REM (C) PANDEMONIA
   20 REM JEFFREY COOKE
   30 REM DEDICATED TO JACQUELINE
   40 ENVELOPE 1,5,10,-5,0,1,0,0,12
7,0,0,-3,126,126
   50 ENVELOPE 2,1,-10,-50,-100,1,1
,1,10,20,-30,50,50,0
   60 ENVELOPE 3,1,0,0,-1,1,2,10,25
,-15,-4,-1,126,126
   70 ENVELOPE 4,1,4,-4,4,10,20,10,
127,0,0,-5,128,126
   80 *FX225,0
   90 !&CFC=RND:?&CF8=&53:?&CF9=&85
:?&CFA=&76:?&CFB=&65
  100 *FX19
  110 PROCdatset(&6000,&7203,250)
  120 PROCdatset(&7300,&76F0,5000)
  130 PROCdatset(&7700,&79F0,6040)
  135 PROCtrans(&6000,&1900,&1200)
  140 PROCtrans(&7300,&2C00,&3F0)
  145 PROCtrans(&7700,&A00,&2F0)
  147 PRINT"READY"
  150 CALL&1900
  160 DEF PROCdatset(START,FINISH,R
ESET)
  170 RESTORE RESET
  180 FOR X%=START TO FINISH STEP 1
0
  190 READ Z$
  200 FOR Y%=1 TO 19 STEP 2
  210 A$=MID$(Z$,Y%,2):A%=EVAL("&"+
A$)
  220 B%=((Y%-1)/2)+X%:?B%=A%
  230 NEXT:NEXT
  240 ENDPROC
  241 DEF PROCtrans(F%,T%,L%)
  242 FOR X%=0 TO L%
  243 A%=X%+F%:B%=X%+T%
  244 ?B%=?A%:NEXT
  245 ENDPROC
  250DATA 208127201D1920361920
  260DATA 6319A5B4F00620581C4C
  270DATA 0619208019 4C001960A9
  280DATA 0085EC858D85AE058FA9
```

```
290DATA 018DF50CA90000F60CA9
300DATA 03A56460A90085B0A954
310DATA 85B1A9008582858385A5
320DATA 85878588DF70CA2008A
330DATA 000B9D000CEAE0F0D0F5
340DATA A90085BCA920A5BD60AD
350DATA F60CC900F01EC901F020
360DATA C902F022C903F024C90A
370DATA F026C905F028C906F02A
380DATA 20C31B4CAF1920F7194C
390DATA AF192033IA4CAF192074
400DATA 1A4CAF192085IA4CAF19
410DATA 20FA1A4CAF192037184C
420DATA AF19207D1960A91F20EE
430DATA FFA90620EEFFA90020FE
440DATA FFA91120EEFFA90320EE
450DATA FFA94720EEFFA94120EE
460DATA FFA94D20EEFFA94520EE
470DATA FFA92020EEFFA94F20EE
480DATA FFA95620EEFFA94520EE
490DATA FFA95220EEFF6020C727
500DATA 20091C20801C20CD1C20
510DATA 4F2220B621ADF50CC902
520DATA F0062030234C1F1A2007
530DATA 24204F2220B62120E127
540DATA ADF70CF0D9C902F00720
550DATA 5720A58400C56020C727
560DATA 20091C20801C20CD1C20
570DATA 4F2220B621A901209F1F
580DATA ADF50CC902F006203023
590DATA 4C601A20072420AF2220
600DATA B62120E127ADF70CF004
610DATA C902F00720572BA58400
620DATA C06020C7272009IC2080
630DATA 1C20CD1C204F22208621
640DATA A90120CD1EADF50CC902
650DATA F006203D234CA11A2007
660DATA 24204F2220B62120E127
670DATA ADF70CF004C902F00720
680DATA 5720A584D0C06020C727
690DATA 20091C20801C20CD1C20
700DATA 4F2220B621A902209F1F
710DATA ADF50CC902F006203D23
720DATA 4CE21A20072420AF2220
730DATA B62120C127ADF70CF004
740DATA C902F00720572BA58400
750DATA C06020C7272009IC2080
760DATA 1C20CD1C204F2220B621
770DATA A90320CD1EADF50CC902
780DATA F006203D234C231B2007
790DATA 24204F2220B62120E127
800DATA ADF70CF004C902F00720
810DATA 5720A58400C08020C727
820DATA 20091C20801C20CD1C20
830DATA 4F2220B621A902209F1F
840DATA A90120CD1EADF50CC902
850DATA F0062030234C641B2007
860DATA 24204F2220B62120C127
870DATA ADF70CF0CFC902F00720
880DATA 5720A584D0886020C727
890DATA 20091C20801C20CD1C20
900DATA 4F2220B621A902209F1F
910DATA A90320CD1EADF50CC902
920DATA F0062030234CAF1B2007
930DATA 24204F2220B62120E127
940DATA ADF70CF0CFC902F00720
950DATA 5720A584D0B86020C727
960DATA 20091C20801C20CD1C20
970DATA 4F2220B621A902209F1F
980DATA A90520CD1EADF50CC902
990DATA F0D8203D234CF51B2007
1000DATA 24204F2220B62120E127
1010DATA ADF70CF0CFC902F00720
1020DATA 5720A584D0B86091F20
1030DATA EEFFA90020EEFFA91020
1040DATA EEFFA91120EEFFA90620
1050DATA EEFFA95320EEFFA94320
1060DATA EEFFA95220EEFFA94520
1070DATA EEFFA94520EEFFA94E20
1080DATA EEFFA92020EEFFADF50C
1090DATA 18694020EEFFADF60C18
1100DATA 693020EEFF60A0F60CC9
1110DATA 07F006EEF60C4C7C1CA9
1120DATA 008DF60CEEF50CADF50C
1130DATA C903F0034C7C1CA902BD
1140DATA F50C20B52960A9108DF3
1150DATA 0CA978BDF40CA584F03E
1160DATA BDF20CCEF20CF038ADF3
1170DATA 0CB570ADF40CB571A911
1180DATA 8573A9068574A9008527
1190DATA A92C8578205D25EEF24C
1200DATA F014ADF30C1869380F3
1210DATA 0CA0F40C690D8DF40C4C
1220DATA 941C60A9BE20752AF00E
1230DATA 20AE1D0009202210208B
1240DATA 2A4C1E1DA99E20752AF0
1250DATA 0E20071ED00920451020
1260DATA B62A4C1E1DA9B720752A
1270DATA F00E20C91D000920681D
1280DATA 20B62A4C1E1DA9972075
1290DATA 2AF00B20E81D0006208B
1300DATA 1D20B62A20541E60A580
1310DATA 8570A5B18571208F25A5
1320DATA 838572201324A57085B0
1330DATA A57185B1A5728583A573
1340DATA 858260A5B08570A58185
1350DATA 7120E925A5838572703A
1360DATA 26A57085B0A57185B1A5
1370DATA 728583A5738582260A580
1380DATA 8570A5B18571208F25A5
1390DATA 93857220362AA57085B0
1400DATA A57185B1A57285B3A573
1410DATA 858260A5B08570A58185
1420DATA 7120E925A5838572201 3
1430DATA 26A57085B0A57185B1AD
1440DATA 72A583A573858260A580
1450DATA 8570A5B18571208926A0
1460DATA 008170C900F005A9FF4C
1470DATA C81DA90060A58085 7085
1480DATA 81857 1A9078572209026
1490DATA A0008170C900F005A9FF
1500DATA 4CE710A90060A5808570
1510DATA A5818571A91185722O9E
1520DATA 26A0008170C900F005A9
1530DATA FF4C061EA90060A58085
1540DATA 70A5818571A9118573A9
1550DATA 078572200AE26A000B170
1560DATA C900F005A9FF4C291EA9
1570DATA 0060A9118570A9008571
1580DATA A9028572A9008573A9BA
1590DATA 8574A9008575A901857A
1600DATA A9008577A270A000A907
1610DATA 20F1FF60A5B2F03AA585
1620DATA F018A5808570A5818571
1630DATA A9118575A9078576A966
1640DATA 8577A92C8578 4CC91EA5
1650DATA 808578A58185 71A91185
1660DATA 75A9068576A9008577A9
1670DATA 2C85784CC91EA583F01B
1680DATA A58085 70A58185 71A911
1690DATA 8575A9078576A9438527
1700DATA A92D8578 4CC91EA58085
1710DATA 70A5818571A9118575A9
1720DATA 068576A9008577A92C85
1730DATA 78205D2560858B A90085
1740DATA 8AA90085B9A4B8A4AB909
1750DATA 120C957AE8C8E006D0F5
1760DATA 2003IFA9008584A9B8AA6
1770DATA B9857A99120CE8C8E006
1780DATA D0F58849AC6B8D081A0A5
1790DATA 7CF00620351F4C101F20
1800DATA 4C1FA57A857EA57B857F
1810DATA A57CF00620631F4C251F
1820DATA 20771F20B81FA9DFA000
1830DATA 917AA900A000917E60A5
1840DATA 7A8570A57B857120BF25
1850DATA A94120C526F0D4A90085
1860DATA 7C60A57AA570A570B571
1870DATA 20E925A94120C526F004
1880DATA A9018 57C60A57A8570A5
1890DATA 7B857120BF25A570857A
1900DATA A571857B60A57A8570A5
1910DATA 7B857120E925A570857A
1920DATA A571857B60A57A8570A5
1930DATA 7B8571A90420C526F004
1940DATA A9010 5A5608588A58B6A
1950DATA 9033A90085BAA9008589
1960DATA A48AA6B9890080C957AEB
1970DATA C8E00600F520DA1FA900
1980DATA 8589A4A8BA6B957A9900
1990DATA 0CE8C8E006D0F5884BACA
2000DATA 8800D160A57DF00D2031
2010DATA 20C9010010209F204CF5
2020DATA 1F206A20C901D003209F
2030DATA 20A570F006204E204CD2
2040DATA 20208520A580C57AA581
2050DATA E57B90062005204C1520
2060DATA 20AF2020082IA57BF00A
2070DATA 20E9204C252020FD20A9
2080DATA 0420C526F004A9018585
2090DATA 60A57A8570A57B8571A9
2100DATA 0A8572A90A8573202827
2110DATA A94420C526F002A90160
2120DATA A57A8570A57B8571A57C
2130DATA 8572203626A570857AA5
2140DATA 718578A572857C60A57A
2150DATA 8570A57B8571A90A8572
2160DATA 20FA26A94420C526F002
2170DATA A90160A57A8570857B85
2180DATA 71A57C85722013 26A570
2190DATA 8570A5718578A572857C
2200DATA 60A57DF007A9008578 4C
2210DATA AE20A9018 57D60A57A85
2220DATA 70A57B8571208F25A941
2230DATA 20C5260013A57A8570A5
2240DATA 7B857120BF25A570857A
2250DATA A571852B60A57A8570A5
2260DATA 7B857120E925A570857A
2270DATA A571857B60A57A8570A5
2280DATA 7B8571A90A8572A90A85
2290DATA 7320282760A57A8570A5
2300DATA 7B8571A90A857220FA26
2310DATA 60A570F03AA57CF01BA5
2320DATA 7A8570A57B8571A90A85
2330DATA 75A90A8576A9028577A9
2340DATA 2E85784C8221A57A8570
2350DATA A57B8571A90A8575A909
2360DATA 8576A9148577A92E8578
2370DATA 4C8221A57CF018A57A85
2380DATA 70A57B8571A90A8575A9
2390DATA 0A8576A90A8577A920B3
2400DATA 784C8221A57A8570A571
2410DATA 8571A9008575A909857A
2420DATA A9BA8577A9208578205D
2430DATA 2560AD300C857AAD310C
2440DATA 857BAD320C857C20A821
2450DATA A57AAD300CA57AAD310C
2460DATA A57CAD320C60A505C901
2470DATA F01DA57CF01320CC21A5
2480DATA 7CF00C200222201022 20
2490DATA 2C224CC82120AE282010
2500DATA 2260A57AB570A57B857(
2510DATA A9058572A90585732028
2520DATA 27A94420C526F00320EA
2530DATA 2160A57A8570A57B8571
2540DATA A9048575A9058576204I
2550DATA 27A90085 7C60A57A18A9
2560DATA 0885 7AA57B6900857B60
2570DATA A57A8570A57B8571A909
2580DATA 8575A9058576A9658577
2590DATA A92F8578205D2560A57A
2600DATA 8570A57B8571A9058572
2610DATA A9098573202827A90420
2620DATA C526F008A9018585A900
2630DATA 857C60AD0C0C857AAD00
2640DATA 0C857BAD0E0C857C2071
2650DATA 22A57A8D0C0CA57B8D00
```

Twain meets twain

Use Spectrum screen pictures on your Amstrad with this program by ***J Keneally***

Creating screen pictures can be very time-consuming even with a good graphics designer. This program allows any Spectrum screen dump to be read into the Amstrad and developed onto the screen in the same colours. There are a wealth of excellent Spectrum screen pictures around which can be used as a starting point for your own Amstrad screens.

Alternatively the program can be used to speed up title screen loading. Even on fast load, the 16K Amstrad screen takes along time to load. It is much quicker to create the screen on a Spectrum, dump it, and use that instead. It also makes life more difficult for the pirates!

To transfer between the Spectrum and CPC464 screens we must scan through each Spectrum screen pixel, then for each pixel check whether it is on or off, and decode the corresponding colour from the Attribute block. Now encode the colour into CPC464 (*Mode 0*) format and write the encoded colour to the screen.

The process is slightly complicated by the mis-match of the number of horizontal pixels per line. On the Spectrum there are 256 on the CPC464 (*Mode 0*) only 160. We must either compress three Spectrum pixels into two on the CPC464 (covering 240 pixels on the Spectrum and losing the other 16) or 'frame out' any 160 pixels on the Spectrum without compression. Both these options are available in the program.

Of course, the Spectrum screen dump must be read into the CPC464 first. This is read into locations 32768 onwards, using a special reader routine. This routine will in fact read in any Spectrum memory dump.

Typing in should be straightforward, though it is easy to make errors when entering the Data statements in Lines 670 onwards. For this reason, each of these lines has a checksum incorporated. If you make a mistake you will get an error message when the program is run.

After running the program, you will be asked to load the Spectrum screen dump and press a key to start loading it. On completion you will have a blank screen with the legend:– F, W, I or S shown. These are the command keys as follows:–

F = display the Full compressed picture.
W = display a Window of 160 pixels. You select the window by entering a horizontal offset. A zero value means start from the extreme left of the picture. The code for this has been written mainly in Basic so that you can more easily follow how it works. It therefore runs much slower than the more complicated code for the 'F' command, which is in machine-code.
I = change the colour of a particular ink. This allows you to instantaneously alter the colour of all parts painted in that ink.
S = Save the screen to tape.

Program Notes

Variables

ldscreen	address of Spectrum dump loader
attr	routine to decode Spectrum colours
fullsc	routine to create compressed picture
xcoord,ycoord	pixel coords for Spectrum
scdad	Amstrad display address
spdad	Spectrum screen address
pixel%, pap%,nink%,	pixel on/off, paper, and ink colours from Spectrum

Line No	
80-160	Initialisation
170	Load Spectrum dump
180-210	Set ink colours
220-260	Select command
270-320	Dump Amstrad screen
330-350	Change ink colour
360-370	Do compressed picture
380-490	Do 'framed' picture
500-660	Routine to create machine code routines
670-840	Code for Spectrum dump loader
860-1100	Code for transfers

```
80 REM Screen transfer utility, S
pectrum to CPC464
90 REM Copyright J. Keneally
100 BORDER 0:MEMORY 18000:CALL &BBF
F:CALL &BB4E:REM reset screen
110 ldscreen=39755:attr=40003:fulls
c=&9CE3
120 xcoord=40000:ycoord=40002:REM x
 & y for code routines.
130 GOSUB 500: REM Load code
140 scdad=&C000:spdad=32768:REM CPC
464 and Spectrum screen addresses.
150 INK 1,13:INK 0,1:PAPER 0:PEN 1:
CLS:PRINT"Load SPECTRUM screen dump
, press a key"
160 IF INKEY$="" THEN 160
170 CALL ldscreen,spdad
180 ON ERROR GOTO 1110:MODE 0:WINDO
W #1,1,20,25,25:PEN#1,7:PAPER#1,0
190 RESTORE 200:FOR i%=0 TO 15:READ
 j%:INK i%,j%:NEXT:REM Set up inks
0 to 15
200 DATA 0,1,9,10,3,4,12,13,0,2,18,
20,6,8,24,26
210 PRINT#1,"F,W,I, or S";:REM Remi
nd user of commands.
220 a$=INKEY$:IF a$="" THEN 220
230 a$=UPPER$(a$):IF a$="F" THEN 36
0
240 IF a$="W" THEN 380
250 IF a$="I" THEN 330
260 IF a$<>"S" THEN 220
270 REM ****Screen Save Sequent****
280 CLS#1:PRINT#1,"Load tape, hit k
ey";
290 IF INKEY$<>"" THEN 290
300 IF INKEY$="" THEN 300
310 CLS#1:PRINT#1,"Saving...";
320 SAVE"!pict",b,scdad,16384:CLS#1
:GOTO 210
330 REM ***** Change inks sequent**
***
340 CLS#1:INPUT#1,"Ink no. ";nink%:
CLS#1
350 INPUT#1,"Colour no. ";col%:CLS#
1:INK nink%,col%:GOTO 210
360 REM ****Compress Spectrum onto
CPC464****
370 CALL fullsc:GOTO 220:REM All do
ne in machine-code
380 REM *****Frame out part of Spec
trum screen****
390 CLS#1:INPUT#1,"Offset? 0-96";of
fset:screenbase=scdad:screenadr=scr
eenbase:CLS#1
400 IF (offset<0) OR (offset>96) TH
EN 390
410 FOR y%=191 TO 0 STEP -1:POKE xc
oord,offset:POKE ycoord,y%
420 FOR x%=offset TO offset+159 STE
P 2
430 IF INKEY$=" " THEN ERROR 17: RE
M if SPACE pressed, abort
440 pap%=0:nink%=0:pixel%=0:CALL at
tr,@pixel%,@pap%,@nink%:col%=pap%:I
F pixel%<>0 THEN col%=nink%
450 CALL attr,@pixel%,@pap%,@nink%:
col2%=pap%:IF pixel%<>0 THEN col2%=
nink%
460 POKE screenadr,2*col%+col2%:scr
eenadr=screenadr+1:NEXT
470 IF (y% MOD 8)=0 THEN screenbase
=screenbase+80:screenadr=screenbase
:GOTO 490
480 screenadr=screenadr+2048-80
490 NEXT:CLS#1:GOTO 210
500 REM Load machine-code segments.
510 REM First the code to read SPEC
TRUM
520 REM format dumps into the CPC46
4.
```

```
530 REM This is used by doing:-
540 REM CALL 39755,address (where a
ddress
550 REM is the requared load addres
s)
560 REM See for example Basic line
20
570 REM ANY Spectrum code dump can
be read,
580 REM not just screen dumps.
590 RESTORE 670:address=39750:GOSUB
 620
600 REM Now the code for decoding t
he Spectrum screen
610 RESTORE 850:address=40000:GOSUB
 620:RETURN
620 REM Load code with checks
630 code=0:checksum=0
640 WHILE code>=0:READ code:POKE ad
dress,ABS(code):address=address+1:c
hecksum=checksum+code:WEND
650 IF code=-2 THEN READ check,lno:
IF check<>checksum THEN CLS:PRINT"E
rror in line ";lno:STOP: ELSE addre
ss=address-1:GOTO 630
660 RETURN
670 DATA 0,0,0,0,0,-2,-2,1500
680 DATA 205,110,188,243,221,124,0,
50,70,155,221,126,1,50,-2,1764,1510
690 DATA 71,155,217,197,1,0,245,217
,8,245,8,62,0,50,74,155,-2,1703,152
0
700 DATA 221,42,70,155,17,17,0,62,0
,205,154,155,46,28,221,42,-2,1435,1
530
710 DATA 70,155,221,94,11,221,86,12
,62,255,205,154,155,48,11,8,241,-2,
2007,1540
720 DATA 8,217,193,217,205,113,188,
251,201,62,1,50,74,155,24,238,20,8,
21,-2,2244,1550
730 DATA 62,8,31,31,230,32,79,191,8
,205,33,156,48,250,33,21,-2,1400,15
60
740 DATA 4,16,254,43,124,181,32,249
,205,29,156,48,235,6,142,-2,1722,15
70
750 DATA 205,29,156,48,228,62,190,1
84,48,224,36,32,241,6,194,-2,1881,1
580
760 DATA 205,33,156,48,213,120,254,
206,48,244,205,33,156,208,-2,2127,1
590
770 DATA 121,230,255,79,38,0,6,165,
24,31,8,32,7,0,0,221,117,-2,1332,16
00
780 DATA 0,24,15,203,17,173,192,121
,31,79,19,24,7,221,126,0,173,-2,142
3,1610
790 DATA 192,221,35,27,8,6,167,46,1
,205,29,156,208,62,196,184,-2,1741,
1620
800 DATA 203,21,6,165,210,4,156,124
,173,103,122,179,32,202,-2,1698,163
0
810 DATA 124,254,1,201,205,33,156,2
08,62,25,61,32,253,167,-2,1780,1640
820 DATA 4,200,217,237,120,217,31,3
1,169,230,32,40,243,121,47,-2,1937,
1650
830 DATA 79,230,7,246,8,55,201,-2,8
24,1660
840 DATA -1
850 REM Code for screen transfer.
860 DATA 0,0,0,58,66,156,71,62,192,
144,230,248,-2,1224,1802
870 DATA 111,38,0,84,41,41,58,64,15
6,60,50,64,-2,765,1804
880 DATA 156,61,31,31,31,230,31,95,
25,17,0,154,-2,858,1806
890 DATA 25,126,230,7,79,126,31,31,
31,230,7,71,-2,992,1808
900 DATA 203,118,40,8,62,2,129,79,6
2,8,128,71,-2,914,1810
910 DATA 121,205,203,156,120,221,35
,221,35,205,203,156,-2,1879,1812
920 DATA 33,66,156,62,191,150,79,23
0,7,87,121,31,-2,1211,1814
930 DATA 31,31,230,31,71,230,24,130
,87,120,230,7,-2,1220,1816
940 DATA 23,23,23,23,23,95,43,43,12
6,61,71,31,-2,583,1818
950 DATA 31,31,230,31,131,95,120,23
0,7,60,71,33,-2,1068,1820
960 DATA 0,128,25,126,23,5,32,252,6
2,0,143,221,-2,1015,1822
970 DATA 110,2,221,102,3,119,201,14
,0,30,4,31,-2,835,1824
980 DATA 203,17,167,203,17,29,32,24
7,167,203,25,221,-2,1529,1826
990 DATA 110,0,221,102,1,113,201,33
,0,192,93,84,-2,1146,1828
1000 DATA 62,191,50,66,156,175,50,6
4,156,221,33,56,-2,1280,1830
1010 DATA 157,229,213,205,67,156,20
5,68,157,135,221,119,-2,1930,1832
1020 DATA 6,205,67,156,205,68,157,2
21,134,6,33,64,-2,1320,1834
1030 DATA 156,52,209,225,18,19,58,6
4,156,254,238,56,-2,1503,1836
1040 DATA 216,58,66,156,230,7,40,18
,235,1,176,7,-2,1208,1838
1050 DATA 9,235,1,66,156,10,214,1,2
,210,237,156,-2,1295,1840
1060 DATA 251,201,1,80,0,9,93,84,24
,238,65,157,-2,1199,1842
1070 DATA 66,157,67,157,0,0,0,0,221
,33,65,157,-2,921,1844
1080 DATA 221,78,0,221,70,1,223,126
,2,167,40,1,-2,1146,1846
1090 DATA 65,120,221,33,58,157,201,
-2,653,1848
1100 DATA -1,0,0
1110 RESUME 210
```

Joining up the dots

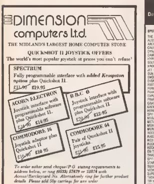
Part One of a general purpose plotting routine
by ***John Cochrane***

When I am wearing my technical consultant's hat I often have to deal with collections of numbers of one sort or another. Staring at a jumble of numbers on a piece of paper is a mind-dulling experience and I will usually want to plot the whole lot out onto a sheet of graph paper as quickly as possible in order to begin to make sense of the data. This is where the QL should start making itself useful by quickly plotting my data for me. *Easel* is, unfortunately from my point of view, intended primarily for plotting financial data and falls down rather badly when it comes to dealing with most other forms of data. The following program will fit a least-squares curve to a set of data and, after automatically scaling the graph, will plot out the data points and the curve.

In fact I have a number of versions of the program running on different machines and providing different facilities. The program has been written with this flexibility in mind and I have thus kept the thing as general as possible. As presented below, the program will plot up to three sets of data on a single graph.
presented below. the program will plot up to three sets of data on a single graph.
A least-squares polynomial of order one to four can be fitted to each data set, or straight lines can be used to "join the data". Up to 20 data points can be included in each data set. This number can readily be increased but the screen display can get crowded and the program takes longer to run. All the data is set up in *Data* statements, although here again modification to allow keyboard input would be quite simple. Another not quite so simple extension which I have working in one version is to get the thing to plot several separate graphs on the screen at one time, but the screen resolution means that the graph annotation has to be simplified if the graph size is reduced too far. Program notes and the rest of the listing next week.

```
100 REMark ************* PLOT *************************
110 REMark This program plots up to 3 lines.
120 REMark Up to 20 points per line.
130 REMark Scaling and curve-fitting is automatic.
140 REMark ******************************************
150 START_UP
160 READ_DATA
170 FIND_SCALE
180 DRAW_GRAPH
190 FOR n_line=1 TO number_of_lines
200   FIND_FIT
210   PLOT_DATA
220   PRINT_KEY
230 END FOR n_line
240 WINDOW #1,477,12,23,12:BORDER #1,1,7
250 WINDOW #1,460,12,30,242:BORDER #1,1,2
260 WAIT$=INKEY$(-1)
270 WINDOW #1,477,244,23,12:CLS #1
280 WINDOW #1,477,212,23,12:BORDER #1,1,7:CLS #1
290 STOP
300 :
310 DEFine PROCedure START_UP
320   REMark Dimension variables, etc.
330   DIM x(3,20),y(3,20),A(20,20),B(19)
340   DIM data_points(3),key$(3,12),line_type(3)
350   MODE 512
360   WINDOW #1,512,256,0,0:BORDER #1,166,0:CLS #1
370   WINDOW #1,477,244,23,12:BORDER #1,1,7
380   INK #1,7:PAPER #1,0:CLS #1
390   AT 8,30:PRINT #1,"THINKING......"
400   SCALE #1,242,-38,-36
410   x_axis_length=305:y_axis_length=185
420   tick_x=1.5:tick_y=2
430 END DEFine START_UP
440 :
450 DEFine PROCedure READ_DATA
460   REMark Read in the plot-data.
470   RESTORE
480   READ title$
490   READ x_title$,y_title$
500   READ number_of_lines
510   FOR n_line=1 TO number_of_lines
520     READ key$(n_line)
530     READ line_type(n_line)
540     READ data_points(n_line)
550     FOR n_data=1 TO data_points(n_line)
560       READ x(n_line,n_data),y(n_line,n_data)
570     END FOR n_data
580   END FOR n_line
590 END DEFine READ_DATA
600 :
610 REMark DATA
620 :
630 REMark MAIN TITLE
640 DATA "Test Graph; 3-Line Plot."
650 REMark AXIS TITLES
660 DATA "X Axis title","Y Axis Title"
670 REMark NUMBER OF LINES ON PLOT
680 DATA 3
690 REMark DATA FOR 1ST LINE
700 REMark KEY-COMMENT
710 DATA "Cubic-Fit"
720 REMark TYPE OF LINE-FIT
730 DATA 3
740 REMark NO OF DATA POINTS
750 DATA 15
760 REMark DATA POINTS FOR LINE 1 (X,Y)
770 DATA -60,-10,-35,-8,-2,-5,3,-4,6,-1,10,3,12,1,20,10
780 DATA 28,18,32,22,51,38,60,49,67,80,92,70,115,45
790 REMark OTHER DATA SETS
800 DATA "Linear-Fit",1,5
810 DATA -56,-10,12,0,28,3,118,30,110,25
820 DATA "Join-Dots",6,4
830 DATA 70,-10,75,-5,80,-10,90,-10
840 :
850 DEFine PROCedure FIND_FIT
860   REMark Fit a curve to the data.
870   type_of_line=line_type(n_line)
880   SELect ON type_of_line
890    =1 TO 4
900     REMark ------- LEAST-SQUARES FIT ----------
910     FOR K=1 TO 6:B(K)=0
920     REMark Simultaneous eqns......
930     order_plus_one=type_of_line+1
940     IF order_plus_one>data_points(n_line) THEN
```

```
950       order_plus_one=data_points(n_line)
960     END IF
970     FOR L=1 TO order_plus_one
980       FOR M=1 TO order_plus_one
990         sum_1=0:sum_2=0
1000        FOR K=1 TO data_points(n_line)
1010          sum_1=sum_1+x(n_line,K)^(L+M-2)
1020          sum_2=sum_2+y(n_line,K)*x(n_line,K)^(L-1)
1030        END FOR K
1040        A(L,M)=sum_1
1050        A(L,order_plus_one+1)=sum_2
1060      END FOR M
1070    END FOR L
1080    REMark Solve system of eqns......
1090    rows=order_plus_one:cols=order_plus_one+1
1100    FOR K=1 TO rows
1110      pivot=A(K,K):K_or_L=K
1120      FOR L=K+1 TO rows
1130        IF ABS(A(L,K))>ABS(pivot) THEN
1140          pivot=A(L,K):K_or_L=L
1150        END IF
1160      END FOR L
1170      IF K_or_L<>K THEN
1180        FOR L=1 TO cols
1190          temp_1=A(K,L)
1200          A(K,L)=A(K_or_L,L)
1210          A(K_or_L,L)=temp_1
1220        END FOR L
1230      END IF
1240    END FOR K
1250    FOR L=2 TO cols
1260      A(1,L)=A(1,L)/A(1,1)
1270    END FOR L
1280    FOR L=2 TO rows
1290      FOR K=L TO rows
1300        sum_1=0
1310        FOR M=1 TO L-1
1320          sum_1=sum_1+A(K,M)*A(M,L)
1330        END FOR M
1340        A(K,L)=A(K,L)-sum_1
1350      END FOR K
1360      FOR K=L+1 TO cols
1370        sum_1=0
1380        FOR M=1 TO L-1
1390          sum_1=sum_1+A(L,M)*A(M,K)
1400        END FOR M
1410        A(L,K)=(A(L,K)-sum_1)/A(L,L)
1420      END FOR K
1430    END FOR L
1440    B(rows)=A(rows,cols)
1450    FOR L=1 TO rows-1
1460      temp_1=rows-L:sum_1=0
1470      FOR K=temp_1+1 TO rows
1480        sum_1=sum_1=A(temp_1,K)*B(K)
1490      END FOR K
1500      B(temp_1)=A(temp_1,cols)-sum 1
1510    END FOR L
1520   =5
1530    REMark -------- JOIN THE DOTS ETC -------------
1540   END SELect
1550 END DEFine FIND FIT
1560 :
1570 DEFine PROCedure FIND SCALE
1580   REMark Sort data, find max., min., then scale.
1590   x_min=x(1,1):y_min=y(1,1):x_max=x_min:y_max=y_min
1600   FOR n_line=1 TO number_of_lines
1610     FOR N=1 TO data_points(n_line)-1
1620       temp_1=0
1630       FOR K=1 TO data_points(n_line)-1
1640         IF x(n_line,K)>x(n_line,K+1) THEN
1650           temp_1=1
1660           temp_2=x(n_line,K)
1670           x(n_line,K)=x(n_line,K+1)
1680           x(n_line,K+1)=temp_2
1690           temp_2=y(n_line,K)
1700           y(n_line,K)=y(n_line,K+1)
1710           y(n_line,K+1)=temp_2
1720         END IF
```





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A gentleman's excuse me

Interrupt driven music on the 64 from the keyboard

of **Gareth Thomas**

Although the 64 has a powerful graphics and sound capabilities that are renowned throughout the computing world, to achieve a mixture of both these mediums in Basic is a slow and difficult process This is where Machine Code comes in to help, in this case with the sound.

If you've ever wanted to play a little tune while juggling with your sprites and hires graphics (well nigh impossible in Basic) now's your chance With this routine in operation you can play any tune you decide while your basic program can be left to do other things

The program makes use of the Hardware Interrupt This takes place every 60th of a second, during which time the processor drops what it's doing and jumps to a routine pointed to by the interrupt ReQuest vector (IRQ) at \$0314 & \$0315 when it scans the keyboard, flashes the cursor, updates the system clock, etc All this of course goes on unnoticed since it happens in a fraction of a second.

All my routine does is to alter the *IRQ* vector to point to my routine which is then executed before the process continues as normal

Program Notes

There are a number of memory locations which are used by the routine

251 (low byte), 252 (high byte) – pointer start of music

253 (low byte), 254 (high byte) – pointer-repeat music.

828 – countdown to next note

829 – waveform (*Poke* without gate set, ie pulse = 64 *not* 65)

830 – *Flag* – play music

831 – *Flag* – repeat music

As you can see 251,252 point to the start of the music. The music will be played from this address onwards until a value of 0 is encountered for duration, when unless the repeat flag is set, play will stop If the repeat flag is set play will continue from the address pointed to in 253 254

The data to be *Poked* for the music must be in the form, *Hi,Lo,Duration,Hi* Lo,*Duration etc* The values for Hi and Lo can be found in the manual page 161 The duration is to 60ths of a second (ie, to play a note for one second the duration must be 60), the maximum duration being 255 which is 4¼ seconds Rests can be achieved by setting Hi and Lo both to 0 and then the duration to the length of the rest

The parameters controlling the sound, such as the ADSR and waveform can be changed at any time even when the routine is running without crashing the computer

Finally the *IRQ* driver also disables the *Run Stop/Restore* keys which if pressed would reset the *IRQ* which would stop the music To set this to normal type *Sys 51858*, but if *Poke 830 0* is typed the keys will still be disabled and only the music will stop

```
0 REM  INTERRUPT DRIVEN MUSIC ROUTINE
1 REM               FOR P.C.W
2 PEM     (C) BY GAPETH THOMAS 1985
10 FORT=832TO885 READA POKET,A NEXT
11 R=51858 T=0
12 R=R+1 READA IFA=-1THEN14
13 POKER,A T=T+A GOTO12
14 IFT<>17654THENPRINT"DATA ERROR" STOP
15
16 SYS 51862 REM INITIALISE IRQ DRIVER
17
20 SD=54272 REM ADDRESS OF SID
25 FOR CL=SDTOSD+24 POKE CL,0 NEXT REM CLEAR SID
30 POKE SD+5,45   REM ATTACK/DECAY
40 POKE SD+6,69   REM SUSTAIN/PELEASE
45 POKE SD+2,255 REM PULSE WIDTH
50 POKE SD+24,15 REM VOLUME
55
60 REM SET MAIN & REPEAT POINTERS
70 POKE 251,64 POKE 252,3
80 POKE 253,64 POKE 254,3
90
100 REM PULSE WAVEFORM
110 POKE 829,64
120
130 REM SET FOR PLAY AND REPEAT
140 POKE 830,1 POKE831,1
150
160 PEM NOTE DATA
170
1000 DATA 25,177,30,28,214,30
1010 DATA 25,177,30,25,177,30
1020 DATA 25,177,15,28,214,15
1030 DATA 32,94,90,25,177,30
1040 DATA 28,214,30,19,63,30
1050 DATA 19,63,30,19,63,30
1060 DATA 21,154,7,24,63,7
1070 DATA 25,177,30,24,63,15
1000 DATA 19,63,60,0,0,0
2000
2010 REM M/C DATA
2020
2030 DATA 120, 169, 71, 141, 24, 3, 169, 254, 141,
     25, 3
2040 DATA 169, 49, 141, 20, 3, 169, 234, 141, 21, 3
2050 DATA 88, 96, 120, 169, 193, 141, 24, 3, 169, 202
2060 DATA 141, 25, 3, 169, 206, 141, 20, 3, 169, 202
2070 DATA 141, 21, 3, 88, 96, 72, 138, 72, 152, 72
2080 DATA 169, 127, 141, 13, 221, 76, 114, 254,
     173, 62
2090 DATA 3, 240, 0, 173, 60, 3, 240, 6, 206, 60
2100 DATA 3, 76, 49, 234, 173, 61, 3, 141, 4, 212
2110 DATA 160, 0, 177, 251, 141, 1, 212, 32, 33, 203
2120 DATA 177, 251, 141, 0, 212, 32, 33, 203, 177, 251
2130 DATA 240, 17, 141, 60, 3, 32, 33, 203, 173, 61
2140 DATA 3, 105, 1, 141, 4, 212, 76, 49, 234, 173
2150 DATA 63, 3, 141, 62, 3, 208, 3, 76, 49, 234
2160 DATA 165, 253, 133, 251, 165, 254  133, 252,
     76, 49
2170 DATA 234, 230, 251, 165, 251, 208, 2, 230, 252,
     96, -1
```

Down in the dumps

Your last helping of ZX Basic code brought to you by ***Stuart Nichols***

Positively the last helping of code this week. Once again, use the Hexloader published in Vol 4 No 31 – to enter the hex dump.

Save the whole of Part Two as, *Save "part two" Code 5904,5464*, after Part One. Once verified, both can be loaded back into your Spectrum, and run using *Print Usr 62777*.

You can now work through each of the instructions checking each one of them functions correctly. If any problems occur, check your code using the Hexdump program (with *Goto 10*).

Should all the typing be more than you can stand, tape copies can be obtained from me for £3.00. Write to 82 Lays Drive, Keynsham, Bristol BS18 2LE.

Keep your eyes peeled for a comprehensive demo program in Vol 4 No 38.

```
F840  C6 1F 4F 38 1F 91 C6 [illegible] = 8A
F878  4F 7C D6 10 38 FC 28 [illegible] = [illegible]
F878  C6 18 47 38 18 90 47 C3 = 15
F800  [illegible] [illegible] 79 3D 38 D4 [illegible] 3C = [illegible]
F80A  57 C3 [illegible] [illegible] C0 [illegible] FB C3 = [illegible]
F878  DC [illegible] FE [illegible] 38 23 FE [illegible] = 40
F8FE  38 0C 47 CD 26 [illegible] CD 83 = 63
F8A0  [illegible] 11 92 5C 10 2D [illegible] [illegible] = CA
F8A8  38 [illegible] C6 10 C5 [illegible] 48 28 = DC
F8E8  5C 18 [illegible] CD 18 8C 63 [illegible] = 2E
F8EE  03 CD ED 4D 34 3C [illegible] 21 = A6
F8C0  38 DC CB [illegible] FE 28 28 02 = 28
F8C8  CD C6 3E [illegible] 4F 29 29 29 = A1
F8D0  [illegible] C1 [illegible] 79 30 3E 21 [illegible] = [illegible]
F8D8  [illegible] [illegible] 4F [illegible] [illegible] CC EF FB = [illegible]
F8E0  D1 C8 [illegible] 3A 91 5C [illegible] FF = A7
F8E8  1F 3E [illegible] [illegible] C3 A4 [illegible] 11 = [illegible]
F8F0  [illegible] [illegible] [illegible] 28 A7 C8 21 2E = 5D
F8F8  40 [illegible] [illegible] [illegible] [illegible] [illegible] CD [illegible] = F4
F900  21 [illegible] FF 19 EB [illegible] 20 [illegible] = 2E
F908  CD [illegible] 7D A7 28 F1 21 3E = 13
F910  [illegible] 19 C1 [illegible] C5 2E [illegible] AF = 7B
F918  [illegible] 3D 12 13 10 FC C1 [illegible] = F9
F920  24 18 [illegible] 21 [illegible] [illegible] 11 [illegible] = [illegible]
F928  [illegible] [illegible] [illegible] [illegible] CD [illegible] 3E [illegible] = [illegible]
F92E  5C [illegible] 2E 12 13 10 FC 21 = D4
F930  [illegible] 4F 01 21 [illegible] C9 [illegible] 21 = [illegible]
F940  CD EF [illegible] [illegible] C3 [illegible] [illegible] 0C = 45
F948  3E 23 [illegible] 28 [illegible] [illegible] [illegible] [illegible] = [illegible]
F950  3E 19 [illegible] 2[illegible] [illegible] [illegible] [illegible] 21 = A5
F958  C3 [illegible] [illegible] 3A 91 5C F5 FD = C2
F960  3E 67 01 3E 2D CD [illegible] FE = 6A
F968  F1 32 91 5C C3 0C 0A CD = [illegible]
F970  4[illegible] [illegible] C3 [illegible] 17 F3 21 [illegible] = [illegible]
F978  4D 11 01 4[illegible] 3E [illegible] 01 FF = C[illegible]
F980  17 [illegible] [illegible] 23 13 01 FF [illegible] = EC
F988  3E [illegible] 8C 77 ED [illegible] 21 21 = 79
F990  1D 32 [illegible] 5C 21 [illegible] 4D 32 = A1
F998  [illegible] 5C F1 C9 [illegible] FE 2C [illegible] = 4F
F9A0  8A 1C E7 CD [illegible] 1C CD [illegible] = 53
F9A8  1[illegible] CD [illegible] F7 3A 62 FD A7 = [illegible]
F9B0  CA [illegible] FE FB CD FB F8 F1 = CD
F9B8  CD 7A C2 F9 24 C9 7B C2 = 5C
F9C0  F9 24 ED 43 7D 3C ED 43 = D6
F9C8  7C FD FE 01 28 [illegible] CD [illegible] = 49
F9D0  F6 C3 4D [illegible] 47 3E 64 [illegible] = 3C
F9D8  0A F9 24 21 [illegible] FA 33 74 = 40
F9E0  F3 [illegible] 7[illegible] 23 23 1[illegible] FC 23 = EC
F9E8  7A FB 32 23 01 [illegible] [illegible] 11 = C3
F9F0  79 FB E0 [illegible] 32 7A FB A[illegible] = 64
F9F8  3E 7B F3 [illegible] 7C F3 [illegible] [illegible] = 91
FA00  7A FD 7C 62 3[illegible] [illegible] 47 7[illegible] = [illegible]
FA08  [illegible] 3E [illegible] 4F CD 4C FD 7C = [illegible]
FA10  [illegible] 3E 14 47 78 [illegible] 3[illegible] [illegible] = 51
FA18  4F C3 6C FD 7C [illegible] 47 7[illegible] = 46
FA20  92 38 [illegible] 4F CB 4C FD 7C = [illegible]
FA28  [illegible] 47 7D [illegible] 3E [illegible] 4F C8 = 32
FA30  6C FE 7C [illegible] 38 2E 47 3[illegible] = [illegible]
FA38  93 38 [illegible] 4F CB 4C FD 7C = CE
FA40  93 38 14 47 7[illegible] [illegible] 38 [illegible] = 73
FA48  4F CB 6C FD 7C 93 3[illegible] [illegible] = [illegible]
FA50  47 7D [illegible] 3E [illegible] 4F CB 4C = 1[illegible]
FA58  FB 7C [illegible] 47 7B [illegible] 3[illegible] [illegible] = [illegible]
FA60  4F CB 6C FD 21 7[illegible] FB 3E = 4E
FA68  75 2[illegible] [illegible] D2 4[illegible] [illegible] 2A 74 = [illegible]
FA70  FE 23 33 22 74 FB [illegible] 23 = 33
FA78  [illegible] 3A 7[illegible] FB 4[illegible] 73 4[illegible] [illegible] = D2
FA80  7B FD EB [illegible] E[illegible] [illegible] [illegible] F8 = 7[illegible]
FA88  F[illegible] 2[illegible] 7A FB 3[illegible] 2A 7[illegible] FB = [illegible]
FA90  [illegible] 2[illegible] 22 7[illegible] FD C3 FD F[illegible] = [illegible]
FA98  [illegible] [illegible] 01 [illegible] [illegible] [illegible] [illegible] [illegible] = [illegible]
FAA0  10 [illegible] 1[illegible] [illegible] 3[illegible] [illegible] 31 [illegible] = 7[illegible]
FAA8  4[illegible] [illegible] 51 [illegible] 64 [illegible] [illegible] [illegible] = 7[illegible]
FAB0  [illegible] [illegible] A9 [illegible] C4 [illegible] E1 [illegible] = [illegible]
FAB8  [illegible] 01 21 01 44 01 49 01 = [illegible]
FAC0  98 01 [illegible] 01 [illegible] 01 11 [illegible] = 43
FAC8  4[illegible] [illegible] 71 [illegible] [illegible] [illegible] [illegible] [illegible] = 3[illegible]
FAD0  1[illegible] [illegible] 4[illegible] [illegible] [illegible] [illegible] C1 [illegible] = [illegible]
FAD8  [illegible] [illegible] 41 [illegible] [illegible] [illegible] C[illegible] [illegible] = 7[illegible]
FAE0  1[illegible] [illegible] 5[illegible] [illegible] A4 [illegible] [illegible] [illegible] = 1[illegible]
FAE8  4[illegible] [illegible] 91 [illegible] E4 [illegible] 3[illegible] [illegible] = [illegible]
FAF0  9[illegible] [illegible] [illegible] [illegible] 44 [illegible] A1 [illegible] = 7C
FAF8  [illegible] [illegible] [illegible] [illegible] C4 [illegible] 3[illegible] [illegible] = 73
FB00  [illegible] AA F[illegible] [illegible] AA [illegible] D1 [illegible] = [illegible]
FB08  4[illegible] [illegible] D1 [illegible] [illegible] [illegible] [illegible] [illegible] = [illegible]
FB10  1[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 01 [illegible] = [illegible]
FB18  [illegible] 10 01 10 [illegible] 11 [illegible] 11 = [illegible]
FB20  1[illegible] 12 [illegible] 12 [illegible] 13 01 13 = C[illegible]
FB28  4[illegible] 14 D1 14 [illegible] 15 F[illegible] 1[illegible] = [illegible]
FB30  [illegible] 16 [illegible] 17 C4 17 [illegible] 1[illegible] = 3A
FB38  [illegible] 19 A1 1[illegible] 44 1A [illegible] 1A = 3[illegible]
FB40  [illegible] 1D 3[illegible] 1C [illegible] 1C [illegible] 1[illegible] = A[illegible]
FB48  4[illegible] 1[illegible] F1 1[illegible] [illegible] 1F 5[illegible] 2[illegible] = A9
FB50  1[illegible] 21 C[illegible] 21 [illegible] 2[illegible] 41 [illegible] = 23
FB58  [illegible] 24 C1 24 [illegible] 23 A[illegible] [illegible] = 21
FB60  1[illegible] 27 C[illegible] F3 F[illegible] C3 F[illegible] 2[illegible] = CF
FB68  CD F3 F6 C[illegible] [illegible] [illegible] CD [illegible] = [illegible]
FB70  [illegible] [illegible] D1 C9 C2 FA C3 FA = [illegible]
FB78  [illegible] [illegible] 15 1[illegible] 7F [illegible] C[illegible] F5 = 4[illegible]
FB80  F[illegible] CD [illegible] FC 7[illegible] F[illegible] [illegible] [illegible] = 14
FB88  [illegible] 24 7[illegible] FE [illegible] [illegible] F[illegible] 24 = [illegible]
FB90  ED 43 5D FC CD F[illegible] F6 CD = [illegible]
FB98  [illegible] FC 7[illegible] FE C[illegible] [illegible] F[illegible] 24 = 2[illegible]
FBA0  [illegible] 82 [illegible] F[illegible] 24 7[illegible] F[illegible] 21 = [illegible]
FBA8  [illegible] F9 24 A7 CA F[illegible] 24 [illegible] = 4A
FBB0  43 5[illegible] FC C[illegible] F[illegible] F6 CD [illegible] = 2[illegible]
FBB8  FC 7[illegible] FE C[illegible] [illegible] F[illegible] 24 7[illegible] = [illegible]
FBC0  F[illegible] [illegible] [illegible] F[illegible] 24 [illegible] 43 [illegible] = [illegible]
FBC8  FC 34 5[illegible] FC 21 [illegible] FC [illegible] = [illegible]
FBD0  [illegible] [illegible] [illegible] F[illegible] 24 FE 21 [illegible] = [illegible]
FBD8  F[illegible] 2[illegible] ED 4[illegible] [illegible] FC 7[illegible] [illegible] = F[illegible]
FBE0  37 C[illegible] 37 [illegible] A[illegible] CA [illegible] FB = 6[illegible]
FBE8  F[illegible] [illegible] CA [illegible] FE F[illegible] [illegible] CA = E1
FBF0  3E F[illegible] FE [illegible] CA 4[illegible] F[illegible] FE = 3[illegible]
FBF8  [illegible] CA [illegible] F[illegible] FE [illegible] CA [illegible] = [illegible]
FC00  FC FE [illegible] C[illegible] [illegible] FC C3 [illegible] = [illegible]
FC08  FC C3 7A C[illegible] F9 24 C[illegible] 7[illegible] = 4[illegible]
FC10  C[illegible] F[illegible] 24 C9 7[illegible] [illegible] [illegible] [illegible] = 3[illegible]
FC18  [illegible] [illegible] C7 [illegible] [illegible] [illegible] [illegible] 7[illegible] = F[illegible]
FC20  A7 1F 37 1F A7 1F A[illegible] [illegible] = 7[illegible]
FC28  F[illegible] A[illegible] [illegible] C7 23 7C E[illegible] [illegible] = [illegible]
FC30  F[illegible] [illegible] C[illegible] 7[illegible] [illegible] 2[illegible] [illegible] 3[illegible] = [illegible]
FC38  [illegible] 7C C4 [illegible] [illegible] 3E 3F 7[illegible] = C6
FC40  C[illegible] 26 [illegible] C9 2[illegible] 7C 56 [illegible] = [illegible]
FC48  C[illegible] 7[illegible] C[illegible] [illegible] AF 3F [illegible] E[illegible] = [illegible]
FC50  F[illegible] [illegible] 47 F[illegible] [illegible] C[illegible] [illegible] 4[illegible] = 5F
FC58  C[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] = C[illegible]
FC60  [illegible] [illegible] 4[illegible] 5[illegible] FC C[illegible] 21 E[illegible] = 4[illegible]
FC68  21 C[illegible] 21 C[illegible] 14 FC [illegible] 5F = [illegible]
FC70  FC 3A [illegible] FC 47 7[illegible] F[illegible] 20 = 73
FC78  1[illegible] F[illegible] [illegible] 4[illegible] 5[illegible] FC 2A 5[illegible] = 23
FC80  FC [illegible] [illegible] C[illegible] 44 FC [illegible] 23 = A[illegible]
FC88  C5 [illegible] [illegible] [illegible] [illegible] C1 E1 1[illegible] = 1A
FC90  F1 7[illegible] [illegible] 3[illegible] 4F 41 F1 77 = 44
FC98  2[illegible] 1[illegible] F[illegible] C[illegible] [illegible] 4[illegible] 5[illegible] FC = [illegible]
FCA0  3A 5C FC [illegible] [illegible] F[illegible] C[illegible] [illegible] = 45
FCA8  [illegible] [illegible] C[illegible] 47 C[illegible] 21 C[illegible] [illegible] = [illegible]
FCB0  C[illegible] 21 C[illegible] 14 FC 23 5F FC = [illegible]
FCB8  3A [illegible] FC 47 7[illegible] FB 2C 1[illegible] = [illegible]
FCC0  F[illegible] ED 4[illegible] 5[illegible] FC 2A 5F FC = [illegible]
FCC8  [illegible] E[illegible] C[illegible] 2C FC [illegible] [illegible] C[illegible] = [illegible]
FCD0  [illegible] [illegible] [illegible] [illegible] C1 [illegible] 1[illegible] F1 = 46
FCD8  7[illegible] [illegible] 3[illegible] 4F 41 F1 77 3[illegible] = [illegible]
FCE0  1[illegible] F[illegible] C[illegible] E[illegible] 4[illegible] [illegible] FC C[illegible] = 2C
FCE8  21 C[illegible] 21 C[illegible] 21 C[illegible] 14 FC = [illegible]
FCF0  [illegible] 4[illegible] [illegible] FC [illegible] [illegible] A7 C[illegible] = A[illegible]
FCF8  1[illegible] 2C [illegible] 2[illegible] FA C1 E1 3[illegible] = 43
FD00  [illegible] C[illegible] F[illegible] C[illegible] 44 FC 1[illegible] [illegible] = [illegible]
FD00  C7 [illegible] 4[illegible] [illegible] FC 3A [illegible] FC = [illegible]
FD08  [illegible] 3[illegible] 4F C[illegible] 21 C[illegible] 21 C[illegible] = [illegible]
FD10  21 CD 14 FC [illegible] 4[illegible] [illegible] FC = [illegible]
FD18  [illegible] C[illegible] A7 C[illegible] 1[illegible] [illegible] [illegible] 2[illegible] = 3C
FD20  FA C1 [illegible] 2[illegible] [illegible] C[illegible] [illegible] C[illegible] = 3C
FD28  44 FC 1[illegible] EC C[illegible] 3E 4F 23 = 2[illegible]
FD30  7[illegible] FC C[illegible] [illegible] FC 3E 7E 2[illegible] = [illegible]
FD38  7[illegible] FC C9 3[illegible] A[illegible] 32 [illegible] FC = 11
FD40  CD [illegible] FC 3[illegible] 7E 32 [illegible] FC = [illegible]
FD48  C9 2[illegible] 1[illegible] 23 F[illegible] FC CD 23 = FC
FD50  FC 3[illegible] 3[illegible] 3[illegible] F[illegible] FC C9 3[illegible] = [illegible]
FD58  1[illegible] 32 2[illegible] F[illegible] C[illegible] [illegible] FD 3[illegible] = [illegible]
FD60  3[illegible] 23 2[illegible] FE C9 7[illegible] [illegible] [illegible] = EA
FD68  [illegible] [illegible] [illegible] A[illegible] [illegible] 7[illegible] [illegible] 1[illegible] = 33
FD70  F[illegible] 4[illegible] 57 C7 E[illegible] 4[illegible] [illegible] FF = [illegible]
FD78  3A 3[illegible] 3C 24 CD 4[illegible] F[illegible] [illegible] = 1[illegible]
FD80  [illegible] C[illegible] D1 F[illegible] 3[illegible] [illegible] 2[illegible] [illegible] = [illegible]
FD88  [illegible] 4F [illegible] [illegible] C9 [illegible] 4[illegible] [illegible] = 36
FD90  FF 3A 7[illegible] 5C E[illegible] [illegible] F[illegible] [illegible] = 3[illegible]
FD98  1[illegible] CD D1 F[illegible] 3[illegible] [illegible] 3E 4[illegible] = [illegible]
FDA0  [illegible] 4F [illegible] [illegible] C[illegible] D1 [illegible] [illegible] = A[illegible]
FDA8  C9 C5 [illegible] [illegible] 1A A[illegible] 2[illegible] [illegible] = 3C
FDB0  3C 3[illegible] 12 3[illegible] 4F [illegible] [illegible] 14 = 1[illegible]
FDB8  23 1A A[illegible] A[illegible] 2[illegible] [illegible] 1[illegible] F7 = C[illegible]
FDC0  C1 C1 C1 A[illegible] C[illegible] [illegible] 11 [illegible] = [illegible]
FDC8  [illegible] 1[illegible] D1 C1 1[illegible] [illegible] 37 C[illegible] = 96
FDD0  [illegible] 4[illegible] 52 FF 3[illegible] [illegible] [illegible] 3[illegible] = 4[illegible]
FDD8  CC 47 CD 14 FC 7[illegible] [illegible] [illegible] = 3[illegible]
FDE0  47 [illegible] 7E [illegible] 1[illegible] FE E4 [illegible] = C4
FDE8  4F [illegible] [illegible] C9 [illegible] [illegible] [illegible] [illegible] = 1[illegible]
FDF0  [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] = [illegible]
FDF8  CD F3 F6 C[illegible] [illegible] F[illegible] E[illegible] CD = 1C
FE00  7[illegible] F4 C[illegible] [illegible] [illegible] C[illegible] CD [illegible] = 31
FE08  F[illegible] C1 [illegible] [illegible] C[illegible] 44 CD 1A = 6D
FE10  F7 [illegible] C1 C5 23 C[illegible] 1A F7 = 21
FE18  C1 E1 E[illegible] C[illegible] 4[illegible] C[illegible] 1A F[illegible] = 27
FE20  C1 [illegible] C[illegible] 1A F7 C9 C[illegible] [illegible] = [illegible]
FE28  F[illegible] CD [illegible] F[illegible] 21 [illegible] [illegible] 7C = [illegible]
FE30  FE 5D C[illegible] 7E [illegible] 2[illegible] [illegible] 7[illegible] = [illegible]
FE38  23 1[illegible] F[illegible] CD [illegible] 2D [illegible] F[illegible] = D1
FE40  24 A7 2[illegible] [illegible] 21 [illegible] [illegible] 23 = 3E
FE48  4[illegible] F3 C7 [illegible] 4[illegible] F3 3[illegible] CF = 71
FE50  23 3[illegible] 14 C9 C[illegible] [illegible] 2[illegible] [illegible] = [illegible]
FE58  F[illegible] 2[illegible] A7 CA 3[illegible] F1 C3 A2 = [illegible]
FE60  F1 7[illegible] A7 CA F[illegible] 3[illegible] FE 11 = [illegible]
FE68  [illegible] F9 E[illegible] C9 11 [illegible] [illegible] 1[illegible] = [illegible]
FE70  [illegible] 2[illegible] FC 7[illegible] C9 CD F3 F6 = 1A
FE78  CD [illegible] F[illegible] C[illegible] 6[illegible] FE 21 F[illegible] = 1F
FE80  E[illegible] 1[illegible] E[illegible] C[illegible] F5 F6 CD [illegible] = [illegible]
FE88  F[illegible] C[illegible] 6[illegible] F[illegible] 21 F9 [illegible] 1[illegible] = 4[illegible]
FE90  [illegible] CD F3 F6 C[illegible] [illegible] F[illegible] CD = 32
FE98  4[illegible] F[illegible] 2[illegible] CD 6A FE 21 FF = 34
FEA0  [illegible] 1[illegible] C7 C[illegible] F3 F6 CD [illegible] = [illegible]
FEA8  F[illegible] CD 6[illegible] FE 21 FE 5D 1[illegible] = [illegible]
FEB0  [illegible] C[illegible] F[illegible] F4 7[illegible] CD 6A FE = 2E
FEB8  [illegible] 43 2A FF CD F3 F6 7[illegible] = [illegible]
FEC0  FE 1[illegible] 3[illegible] 2[illegible] 7[illegible] FE 2[illegible] 2[illegible] = 3A
FEC8  3[illegible] [illegible] 43 3[illegible] F[illegible] C[illegible] F5 F6 = 2E
FED0  7[illegible] 3C FE [illegible] 2[illegible] 1C 7[illegible] 2[illegible] = [illegible]
FED8  F[illegible] [illegible] 3[illegible] 14 [illegible] 43 2[illegible] FF = [illegible]
FEE0  C[illegible] FE F6 CD 6[illegible] FE [illegible] 43 = 1C
FEE8  24 FF 21 F[illegible] ED 11 [illegible] [illegible] = 43
FEF0  1[illegible] 1C C3 F[illegible] 24 [illegible] [illegible] [illegible] = 14
FEF8  [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] C[illegible] [illegible] = [illegible]
FF00  2[illegible] 21 [illegible] 5[illegible] 77 54 5D 13 = E1
FF08  [illegible] FF [illegible] ED [illegible] C[illegible] 1[illegible] [illegible] = [illegible]
FF10  2[illegible] FC 11 2[illegible] F[illegible] [illegible] [illegible] [illegible] = 44
FF18  [illegible] [illegible] [illegible] C[illegible] [illegible] [illegible] [illegible] [illegible] = [illegible]
FF20  [illegible] [illegible] [illegible] [illegible] CD [illegible] 1[illegible] 21 = [illegible]
FF28  FF E[illegible] A7 ED 42 3[illegible] [illegible] 21 = 1[illegible]
FF30  FF [illegible] A7 [illegible] 42 3[illegible] [illegible] [illegible] = F[illegible]
FF38  C[illegible] CF 1[illegible] [illegible] [illegible] 47 C[illegible] 57 = 1[illegible]
FF40  71 [illegible] F[illegible] [illegible] 21 17 C[illegible] 1[illegible] = [illegible]
FF48  2[illegible] F2 7[illegible] 1[illegible] 3[illegible] 13 [illegible] 3[illegible] = [illegible]
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Arcade Avenue

Wally mania

Can I please ask for no *more* solutions to *Pyjamarama* or *Sorcery* – the former was printed in entirety ages ago, and the latter we are not going to print because of the games wizard competition. I Grainger of 33 Wellfield Road, Wingate, Co Durham TS28 5LA has finished the latter with 98 000 and kindly offers help to anyone who sends him/her a large SAE. He/she has also scored 12550 on level 11 of *Blagger* and 91 840 on *Roland in the Caves* after escaping four times. We are also given this tip for *Steve Davis Snooker*: "When there is only the black ball left on the table abort the game. You should get a higher break than Steve (my real high break is 34 points)."

On the edge

Here's a letter that I have been very slow in printing from George White of Bury, concerning help for The Edge's *Quo Vadis* for the C64.

"The original question was how to deal with the 'snakes' and the 'heads' or 'faces' and before I could answer I would have to know which ones!

"Some reports have it that you should shoot everything on the way down to make the return trip easier, but because of 'one-way' traps you aren't coming back the same way. If an energy chest is in the room it may pay to clear the monsters, but the one-way system even stops you getting to some of the chests and to get to them again you have to return at a different level.

"Shooting castles is comparatively easy firing from left to right – if you do it the other way you have to jump more to get out of the way. Firing up and down into chambers is hardest (I find it best to outrun them if possible).

"I won't give away the position of the riddles as that would remove most of the adventure part, but here they are: *A thousand added to everything loses fifty losing the Dutch one, Royalty appears before me, Touro' force using only a knife, to eat an A1 solution, binary indecisions between silent beginnings and quiet terminations* (a cruel one this as you kill yourself getting it), *be sweet and be quick to go backward.*

Money's worth

"I would point out that there are two rooms I have not got into, but I have found the sceptre and my high score is 826,000."

Sounds like you got your money's worth out of that game, George. He very kindly says that if anyone sends him an SAE and 20p to cover photocopying costs, he will send a copy of a map of the game. Write to him at 44 Tenterden St, Bury, Lancs.

Once the game is finished and you get back the rope, you get the last riddle: *"When you think you are there, you really are not, you will have to return, for what you least forgot."* George would like help with this riddle and Phil Walker of Skelmersdale writes that the message means you must press *Return* and it simply goes back to the title page.

Phil's goes on to say "My best buys for the Commodore are 1) *Quo Vadis* 2) *Raid over Moscow* 3) *Eureka* 4) *World series baseball* 5) *GoGo the Ghost*. My five worst are 1) *Arcadia 64* 2) *The Great Space Race* 3) *Gateway to Apshai* 4) *Stellar Wars* 5) *Gilligan's Gold*. If anyone would like help with any of the games above, I'm at Skelmersdale 22938."

Mike Williams of Guisborough in Cleveland has sent in a superb letter full of pokes and tips for the Spectrum. Let's begin with the complete solution to *Everyone's A Wally*: "Get monkey nut to get into zoo. Dick takes plunger and monkey wrench to mend fountain. Gasmask to get in cave. Wilma takes rubber stamp and parcel to get stamped at post office.

"Fill bucket by walking past fountain. Wally takes full bucket and sand to get cement. Walk past wall with cement and trowel and wall will be built. When you are in the cave and want to get out without being savaged by the shark, wait until another character enters the sewer and do a character swap.

"Wilma has to take books 1,2, and 3 back to the library to receive jump leads, bunsen burner and letters B respectively. Kill a certain amount of aliens to lead electricity pylon nasties astray.

Everyone's a Wally

Tom can get the flat car battery from the fork lift truck. Harry must walk over the blown fuse in the butchers with the pliers and fusewire and it will become rewired.

"Harry – take a good insulator and screwdriver to mend pylon. This sends power to the battery in BP. Harry takes the flat battery and jump leads to BP to recharge it.

Tom – put recharged battery back in truck. Wally go from truck on to wall to get letter K. Tom – oil can moves trolley in supermarket (it doesn't have to be full). Harry – jump on trolley and then freezer for letter A. Wally – get superglue and hook will be fixed. Put the hook back in the docks. Wilma swap stamped parcel with the letter E. Dick – gas pipe and chewing gum. drop the pipe on workbench and get the patch with the chewing gum. Walk under the leaking pipe and it will mend. Replace the pipe in the pipe in the cave."

Phew! What a marathon that was.

Free Monty

Mike has also given some diagrammatic tips for *Monty is Innocent*, which we can't easily reproduce here – so I will explain them. On the screen with all the keys number them 1 to 8, working from left to right and top to bottom. These keys then open these doors. On the screen with a long ladder on the left, and a short one on the right, the door on the left is key 1, the door on the right is key 5. On the adjacent screen with one long ladder on the right the door is key 2. On the long corridor screen, the doors on the left from front to back are 8,7,6. On the right from front to back, 4 3.

Tony Kendle

We are searching for the top UK computer games player – the best there is!

The very best of Britain's game players will get to fight it out on a number of top secret new games – scheduled for release in the autumn.

Here's how it works

Study the table below and look at the column for the machine you own – these are the games you'll need to master. Send your high scores in on the form below making sure that your scores are authenticated by a responsible individual signing the form. Any scores achieved using technical short-cuts – such as infinite lives Pokes – will not be accepted.

Between now and September Tony Kendle will be keeping you up to date on the *Arcade Avenue* page with just who has the scores to beat. Then in September the top three scorers on each machine will battle it out for a place in the final and the chance to be the first to play our 'top secret' games.

	Commodore	BBC	Spectrum	Amstrad
Game 1	Suicide Express	Elite	Technician Ted	Sorcery
Game 2	Beach Head	Jet Pac	3D Star Strike	Splat!
Game 3	Shoot the Rapids	Chuckie Egg	Cyclone	Manic Miner

Game Wizard Entry Form

Micro ....

Game 1 score

Game 2 score

Game 3 score

Name

Address

Your signature

Witness's signature

Earth-shattering

The release of a new Level 9 adventure is, as we so rightly say, an earth-shattering experience (well a flag-day, anyway, for all aspiring adventurers!). *Red Moon* is no exception – in fact, I'm prepared to say that this is the most enjoyable of the Level 9 series since *Dungeon Adventure*. The new adventure is available on the Spectrum, Commodore 64, BBC and Amstrad.

You'll know by now that the game involves magic. The story goes that for aeons of time, the Moon glowed as bright as the sun, the colour of Magic. Its power bathed the Earth, and spells were widely and easily used. After constant battles with its rival, the Sun, the Moon eventually dwindled to what we know today, a pale shadow of its former glory. The magicians gathered to find a solution, and thus was the Red Moon Crystal made, a thousand-fold weaker than the original moon, but enough to keep an oasis of magic alive in the Moon Tower of Baskalos. Then the Moon Crystal was stolen. It is your task to recover the crystal.

Pretty standard stuff, but Level 9 have fashioned an extremely accessible adventure while retaining their customary verve and style. All the usual conventions are recognised, with the addition of magic spells which can be used by the player. Unlike other adventures which require lengthy processes in order to gain the experience required to wield spells, *Red Moon* provides each spell with a 'focus' object – find the Dulcimer, for example, and you can immediately use the *Escape* spell. This is particularly useful, allowing the player to jump right back to the starting location and back again (thus easily storing treasures and so on), of ocurse, without the Dulcimer, you're stymied. Other useful spells include the *Snoop* spell, which allows you to look into an adjoining room (to check for monsters), the *Shield*, which wards off attacks for a while, and *Zap* which of course attacks an enemy magically. One of the most useful is *Find*, which locates a given subject – simply by typing in the standard sort of treasure such as Rings, helmets and so on will give you an awful lot of information, not only on whether particular objects are present in the adventure, but also where they are, and the corollary of this is that you will find locations that you haven't yet stumbled across.

These spells are really useful and ensure that a lot of thought has to be given to the correct order in which tasks are undertaken. An ambitious detail of spell-casting, however, namely that spells can't be cast when in the presence of iron, occasionally comes adrift. For example, *Save* and *Restore* for some reason are spells, and so, if you are carrying the Horseshoe, you can't Save your position.

How many locations? The cassette inlay mentions "over 200", but I've only come across just over half, and several of these were "tiny passages", all the same, in the grand tradition. I know of at least three more that I haven't yet found, and presumably there are many more inter-connecting locations (see the *Find* spell).

Red Moon

While the mechanics of the game are rather different from othas Level 9s, the location descriptions are written with the usual attention to detail and atmosphere. I was, however, disappointed that the description of a very early location contained no less than two spelling mistakes – unforgiveable in a full-price adventure!

No sooner had I got fairly well into *Red Moon* (and let me tell you that this is a very addictive game, being very easily mapped – until the player can no longer juggle all the objects and has to stop to work out the problems – and very atmospheric), than a list of hints came through from Mr M Kerr of Newcastle. Refer to the list of words at the end of *The Corner*:

To Drain The Lake, 8, 17, 30, 12, 16, 17
To Get Through The Tiny Door, 23, 2
To Get Past The Watchdog; 8, 21, 30, 38
To Get The Sword From The Forge, 3, 38
To Swim Underwater; 3, 31, 13, 16, 35, 1
To Get Into The Metal Room; 3, 18
To Be Safe On The Precarious Platform; 13, 10

Mr Kerr also needs help in opening the safe, getting the Iron Coins and also wonders what to do with the grid in the Metal Room. You need to Dial Safe, but I can't help you with the other questions. If you know better, write to him at 27 Eddrington Grove, Chapel House Estate, Newcastle upon Tyne NE5 1JG

Quicksand

Mr Kerr also offers help in *Mordon's Quest*, which is from Melbourne House. I haven't seen this one myself, but I can pass on his help to others, hoping that it all makes some sense.

To Cross The Quicksand, 5, 28, 24
To Get Past The Pigmy, 9, 32, 7, 14, 33, 6, 39, 33, 15, 24
To Get Past Carniverous Plant, 9, 24, 20
Who Is King Of The Jungle, 37
To Cross The Waterfall, 26, 37, 30, 11, 4, 29

Time for *Subsunk* from Firebird. Paul and Glenn Gilney would like to know where is the battery for the vacuum, where is the acid, and also how do you get the pills from the bottle without them getting lost on the floor. They would also like any clues for *Eye of Bain*, in particular, how to pass the Beast down the Well. Here, you'll need the Ruby – then type Say Fire Now, Enter Hole and progress from there. They have completed *Colditz* and *Valkyrie 17*, both with a little help from their dad ('are we the youngest at 13 and 10?' I haven't the faintest idea, lads!) If you need help in these (as well as the venerable *Hobbit*, or can help them in *Subsunk*, write to them at: 8, The Hollies, Woodburn, Carrickfergus, Co Antrim, Northern Ireland.

1 FLASK 2 MUSHROOM 3 WEAR 4 GO 5 DROP 6 MAKE 7 BERRIES 8 PUT 9 USE 10 BRACERS 11 TEMPLE 12 HOLE 13 CARRY 14 THORNS 15 KILL 16 TUBING 17 HANDLE 18 BOOTS 19 TURN 20 BODY 21 PILLS 22 HI! 23 EAT 24 PIGMY 25 PUT 26 SACRIFICE 27 JILLY! 28 NORTH 29 THE 30 IN 31 GASMASK 32 BAMBOO 33 TO 34 BLANKET 35 AND 36 MEAT 37 FROG 38 GLOVES 39 BLOWPIPE

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CBM64 programs for sale old and new titles at very low prices SAE to C Masrel 33 Woodlands Road Crumpsall Manchester M8 7LF (your programs [illegible])

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ATARI 800XL plus 1010 recorder boxed with leads, £110 Tranmell £10 Games cassettes Arcadi Zaxxon Strike Eagle and others £3 each Tel 01 907 6384 Ask for Steve

ATARI Basic Programmers Kit 5 tapes plus work books etc £25 one (Value over £70) Tel 0604 20016 ask for Simon

ATARI 800 with 1010 cassette recorder joystick 60 assorted games plus cartridge copier Basic XL, £140 one Tel 0604 791067

ATARI 800 XL cassette recorder 18 S/W plus mags books cost over £338 will accept £200 ono Tel 0733 68268

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ATARI 800XL 64K 1010 recorder inc manuals box S/W keyboard mags joystick original packaging £115 ono Tel 0252 520223

ATARI 1020 4 colour printer plotter hardly used complete with paper and pens Only £65 or £60 if collected Tel 0927 269494 ask for Andrew

ATARI 800XL 1010 £150 boxware 2 under 8 months old Pole Pos Assembler Editor Star Raiders etc Also books mags (Analog Antic) and ny stock Offers around £150

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Commodores for Sale

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ZX81 keyboard, Hi Res Board ram Pack 16K Ram pack and 40 original tapes any offers? High and working ZX [illegible]

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AMSTRAD CPC664, five months old minus monitor with software and books £150 ono Tel Yateholm 876 between 9-5.

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256K QL with TR disk interface Centronics printer interface plus serial to parallel printer interface ram disks 35 Microcarts books plus software Chess toolkit etc £350 Bracknell 485231 after 5 30 pm

FREE MPS801 printer hardly used if you buy my 1541 disc plus Easyscript Easyspell Easycalc Easyfile various utilities games for only £250 ono I may even deliver Billingshurst 040 381 4767

TELETEXT adaptor for BBC B for sale with Rom and manual £130 ono Tel Corden 04243 3044 evenings

2 x MICRODRIVE + INTERFACE 1 unused £75 ono Tel Colchester 32-31 20 after 5 30 pm

AMSTRAD CPC 464, computer colour monitor monitor and keyboard covers Quickshot 2 joystick Lots of software £300 Tel Westhoughton 0942 816129 Greater Manchester area

SPEECH recognition system for Spectrum £20 (cost £58) Also Shadowfire for CBM64 and Spectrum Mirror (Spectrum) Raid Moscow Dark Star Frank Bruno Also Memotech software (Level 9 P Peter etc) Tel 0822 856744

BBC B OS 1 2, DFS 400K D/sided 40/80 disc drive daisywheel printer leads manuals £803 Business software 15 months at full yr guarantee cost £3000 offers over £1000 Tel Gloucester 0452 412572 after 6 pm

PET Development System for C64 8032 4040 4022P Interpod IEEE Bus convertor plus books cables and software £1 000 ono Tel 01 567 3728

PRINTER Tandy LPVII dot matrix 80 column tractor feed parallel and serial interface £90 Tel 01 363 8280

SINCLAIR QL 3 months old still have guarantee 2 joysticks 9 books Psion Chess Talent Zkul GraphiQL 8 blank microdrives and box all QL User magazines £350 Tel Castleford 518241

COMPUTER SWAP

Computer Swap entries are [illegible] words. All entries cost £2 5[illegible] can be accepted by telephone if a Visa/Access number is given. Please enclose a cheque or postal order or give Access or Barclaycard No in the box provided. Only text appearing in the grid will be printed. Send the form to: Computer Swap, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

All software offered through computer swap must be in original condition and for private sale only.

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Name ....

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DIARY

Event	Dates	Venue	Admission	Organisers
Computer Show	August 24 10.30am-5.00pm	Crest Motor Hotel 641 Dunstable Road Luton Beds	80p	CJS/Northleach 04519 800
Computer Show	August 31 10.30am-5.00pm	Co-op Hall East Street Swindon Wiltshire	80p	CJS/Northleach 04519 800
Personal Computer World Show	September 4-8	Olympia London	£2.00	Montbuild 01 486 1951
Electron and BBC Micro User Show	September 27-29 10.00am-6.00pm September 29 10.00am-4.00pm	UMIST Manchester	£2.00 adults £1.50 children	Database Publications 061-456 8383
Amstrad User Exhibition	October 5-6 10.00am-6.00pm	Novotel Hammersmith	£2.00 adults £1.00 children (in advance)	Computer Marketplace 01 930 1612

MSX D3K drive with Tasword 4 months old £250 Tel Shaft eld 302060

APPLE 2+ 80K twin discs monitor Super Serial and 80 column cards PFS File Report Graph Visicalc Applewriter other software Silentype printer perfect condition, manuals included £480 Tel Epping 74666

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MICROVITEC Cub 653 standard resolution QL Monitor (colour) as new £250 5 QL books £4 each £20 the lot Monitor and books £260 Tel Berry 81-501 166 (eves wknds)

BBC B 32K Swr + Utilities motorised data recorder 100 DFS (40K) drive Epson RX80FT + 1200 sheets organiser desk most new quality wide ranging s/w books Roms + joystick £1,270 ono Further details (0628) 31493

HOBBIT Fast Tape Unit for BBC computer £35 Three printers suitable BBC and other computers, £29 £50 and £75 Elf II computer £35 Mk 14 computer £35 Tel 01 386 1448

SPECTRUM PLUS recorder joystick interface books and s/w 9 months guarantee £150 ono Tel Leicester 553 434 ex 3815 (Weekdays ask for Phil)

QL for sale hardly used good condition £250 ono Tel Sheffield 384 535 evenings

VIC 20 Starter Pack 16k joystick 5 cartridges 8 cassette games 2 books £150 ono Tel 01 550 1360 (Ilford area)

EPSON HX 20 portable computer with memory expansion unit, built in micro cassette drive and printer Boxed as new plus spare printer ribbon paper and cassettes £240 ono Tel 0734 733404

BBC B 1.20S two Beta recorders three joysticks including Quickshot II interface for joysticks £20 of mags £10 of books £160 of top software and many blank cassettes vgc £365 Tel 0743 59057

AMSTRAD CPC464 (Green) complete with manual Quickshot II joystick and modulator £170 ono Six months old very good condition Tel Kev on Shaw 845798 after 6.00pm

SEIKOSHA GP 50A Graphics Printer for BBC or any Centronics Interface new ribbon approx 1000 sheets paper £60 ono Tel 0488 72461

ACORN ELECTRON for sale with mags books games etc Worth over £230 will sell for just £90 Tel 0706 225522 9-5 or 0706 42 7C42 after 5pm

AMSTRAD CPC464 £180 includes Green Screen Monitor Amsword The Wordprocessor Hisoft's Devpac (Ass/Disass) other software and joystick also available going away hence ridiculous price hurry Tel 01-883 3865 eves

CBS Colecovision Video Game console plus 18 games and super controllers and roller controller worth over £500 very good condition £210 ono Apply 48 Crossfield Road Hoddesdon Hertfordshire EN11 0HN

CPC464 and colour monitor for sale complete with £150 worth of original s/w inc Alien 8 Sorcery Way of Exploding Fist Quick sale £265 no offers Tel 0173 44724 evenings only

ENTERPRISE 64 two months old hardly used plus £30 worth of software including Fantasia Diamond Sell for £150 ono A Melvoy 40 Gwaun Road Rhydyfelin Pontypridd Mid-Glam CF37 5PU

SWAP Spectrum + and joystick RS232 Interface all leads and ten original programs All in case some home recorded tapes etc Wanted Atari 1050 disc drive + discs Anytime Tel 0384 245644

ACORN ELECTRON plus tape recorder First Byte joystick interface £90 worth of S/W inc Elite, Chuckie Egg Twin Kingdom Valley Pengo and Blagger Will ask for £130 Tel Huntingdon 216748

Spectrums for Sale

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48K SPECTRUM data recorder joystick and program mabler interface all under guarantee. £140 ono Tel Winsford 57184

ZX SPECTRUM 48K Cheetah speech synthesiser s/w worth up to £400 Sell £200 All under guarantee Contact before 5pm Timmy 01 508 3845

SPECTRUM 48K for programming or business Hardware inc Interface I for all uses Worth over £600 Will sell £300 ono Tel Graham on 01-658 7077

48K SPECTRUM + interface + Quickshot II plus set of home computer magazines in binders + 50 games + data recorder + leads all boxed with manuals Offers only Tel 0222 497658 7-9pm

SPECTRUM OWNERS want a computer with real keyboard sprites which can run your software? Memotech MTX500 cost £250 will sell for £170 Write A Miller 47 Gladstone Street, Leven Fife Scotland

48K SPECTRUM Fuller keyboard on/off switch save/load sw tch power supply built in Currah speech and software £130 ono Tel 0533 841581

BARGAIN 48K Spectrum cassette recorder 50 top games all good condition worth £600 sell for £160 ono Tel Notts 514766

48K SPECTRUM Interface I microdrive programmable joystick £170 Tel 0602 51 46

48K ZX SPECTRUM plus Kempston joystick and over 70 games £90 ono Tel 021 351 1078 Richard

ADVENTURE HELPLINE

Urban Upstart on Commodore 64. How do I pass the building site without getting stuck? How do I carry all the objects found? Leslie Austin 26 Royal Avenue West Onchan, Isle of Man

Fantasia Diamond on the Spectrum. I have explored the house and the jigsaw cave and I have tried to cross the river What now? Karl Butcher 4 Greenlees Thundersley Benfleet Essex

Project Volcano on the Amstrad. How do I get past the lift service droid? C Tinsley 23 Liverpool Road, Page Moss Liverpool L14 3PC

Return to Eden on Amstrad How do I get into the bank? I have 11 280 credits and I have the ID card. John Walker 32/8 Shandon Crescent Haldane Alexandria Dumbartonshire G83 8EX

Jewels of Babylon on Amstrad Can I get past the lion and crocodile How does the crab move? Where are weapons? Andrew Pearce, 11 West Park, South Molton Devon EX36 4HJ

The Hobbit on Spectrum How do you get into the Goblin's cave? Simon Pickup 54 Crouch Hall Road London N8 8HG

Brawn Free/Smugglers Cove on the Amstrad. How do I get pass the wooden door(BF)? How do I use spade get past pirate cat, mermaid? D Carr, Thornlea Oak Road Mottram Saint Andrew Macclesfield Cheshire SK10 4RA

Wizardry 2 on Apple 2. Can I work out how to get to the down stairs on level 1 Can I work out the riddle in the labyrinth. M. Meredith 48 Merton Road Wandsworth, London SW18

Fourth Protocol on Spectrum I need help with Warburton, Faulkner and Pasternak Scott Macfarlane 8 Beecroft Terrace Corstorphine Edinburgh EH12 7LZ

Quest on Spectrum How do I get an object and how do I say hello to a dwarf? James Alleiv 4 Barling Drive, Ilkeston Derbyshire DE7 8JA.

Valkyrie 17 on Commodore 64 How do you get money to leave hotel? Peter Hurley Support Troop C Sqn 13/18 RH(QMO) BFPO 16

Fantasia Diamond on Amstrad Don't know what to do with silver statue Clive Robert Woodings 7 South Street Alvaston Derby

Jewels of Babylon on Amstrad How do you kill the lion and the crocodile? Where is the gun? Will swap hints for Forest at World's End. Natasha Silva 8 Coldhanger Close Rayleigh, Essex

Fantasia Diamond on Amstrad. Does anyone have a full solution? David Carr "Thornlea Oak Road, Mottram Saint Andrew Macclesfield, Cheshire

Williamsburg Adventure on C16. How do I get past the gravestone and what do I do with it? D W Ironside 69 Melville Heath Gade Woodham, Ferrers Chelmsford

Ashkeron on Spectrum. How do you get me at the dungeon? John Harris 31 Braunstone Avenue Leicester

Lords of Time on Amstrad. How do I get past the brontosaurus on level 3 after it's lifted me out of the pit? Leslie Moss 34 Wakehams Hill, Pinner Middx (01-868 3873)

Erik the Viking on Spectrum Please help with directions at sea—I'm lost! David Blackledge 7 Greenway Close Bolton

Catacombs on Commodore 64 I can't even open the first door Any information will be very welcome L Reynolds 68 Oakdale Welwyn Garden City Herts

Emerald Isle on BBC How do I get out of the mole hole and where do I go from here? R Dawson 41 Union Court, Otley W Yorks

Jewels of Babylon on Amstrad. Where is the key and how do I get it? Also what is the plank for? W Leeroyd, 105 Wellstone Avenue, Bramley Leeds

Eureka on Commodore 64 I have only achieved 50% on the prehistoric part Can someone please help me? I can offer help on Nos 2 3 and 4 Kevin Blake 41 Sycamore Grove, Braintree Essex.

Adventureland on Commodore 64 Any help please I'm new to adventures but enjoying them! J Hammond, 4 Maidstone Avenue Romford Essex

The Final Mission on Spectrum. How do I kill the stone monster? How do I get through the second door? A Hughes, 20 Tyddyn To Menai Bridge, Gwynedd.

Eureka 8 on Commodore 64. I have the chicken but I can't find the soothsayer to give it to Richard Kake 160 Sutton Road Leigh on-Sea, Essex

Castle Quest on BBC I have got the wand and 80 score points but I don't know how to finish. Steve Johnstone, 25 Bristol Road Colchester Essex

Aztec Tomb on Commodore 64 I'm stuck at the harbour and I don't know how to go anywhere on the boat I have been to the island. Any help please? J Hammond 4 Maidstone Avenue Romford Essex

System 15000 on Spectrum What is the second bank code? Martyn Cheyney 13 Greenock Street, Armley Leeds 12

Fantasia Diamond on Amstrad. How do I get the conductor to play music to open the musical door? What do you do with the statue? D P Ward 5 Railway Terrace, Rogiet, Gwent NP6 3JQ

Fantasia Diamond on Amstrad How do you get across the river and how do you open the manhole?

Forest at World's End on Amstrad When you are in the volcano how do you open the treasure chest? Jason Stanway 24 Newpool Road Knypersley Biddulph Stoke-on-Trent

Valkyrie 17 on Spectrum How do I get out of town and get money for the telescope? M Winstone 11 Burnet Close, Ingleby Barwick Cleveland

Escape from Pulsar 7 on Commodore 64 What does the white button do and how do you open the grill in the wrecked cabin?

Feasibility Experiment on Commodore 64 Where is the wick for the oil lamp? Edward Coult 41 Volta Street Selby Yorks (Selby 708343)

Amstrad

1	(1)	Way of the Exploding Fist	(Melbourne House)	£9.95
2	(2)	Red Moon	(Level 9)	£6.95
3	(3)	Dun Darach	(Gargoyle)	£9.95
4	(4)	Beach-head	(Access/US Gold)	£9.95
5	(10)	Finders Keepers	(Mastertronic)	£1.99
6	(–)	Chiller	(Mastertronic)	£1.99
7	(6)	Alien 8	(Ultimate)	£9.95
8	(5)	Nonterraqueous	(Mastertronic)	£1.99
9	(3)	Red Arrows	(Database)	£9.95
10	(8)	Knight Lore	(Ultimate)	£9.95

Bubbling Under

Sorcery	(Virgin)	£8.95
Rocky Horror Show	(CRL)	£8.95

Atari

1	(1)	Bounty Bob Strikes Back	(US Gold)	£9.95
2	(5)	Mig Alley Ace	(Microprose/US Gold)	£9.95
3	(3)	Hard Hat Mack	(Ariolasoft)	£9.95
4	(2)	Airwolf	(Elite)	£8.95
5	(4)	Drop Zone	(Microprose/US Gold)	£9.95
6	(7)	Bruce Lee	(Datasoft/US Gold)	£7.95
7	(6)	Kissin Cousins	(English Software)	£9.95
8	(6)	Archon	(Ariolasoft)	£11.95
9	(8)	Mines 2049 er	(Big 5)	£9.95
10	(–)	Mule	(Ariolasoft)	£14.95

Bubbling Under

Ghostbusters	(Activision)	£14.95
Colourspace	(Llamasoft)	£7.95

BBC

1	(2)	Beach-head	(Access/US Gold)	£9.95
2	(1)	Revs	(Acornsoft)	£14.95
3	(5)	Red Moon	(Level 9)	£6.95
4	(3)	Alien 8	(Ultimate)	£9.95
5	(3)	Contraption	(Icon)	£9.95
6	(4)	Elite	(Acornsoft)	£12.95
7	(6)	Atic Atac	(Ultimate)	£7.95
8	(10)	Bobby Charlton's Soccer	(Stack)	£11.95
9	(6)	Repton	(Superior)	£9.95
10	(–)	Knightlore	(Ultimate)	£9.95

Bubbling Under

Magic Mushrooms	(Acornsoft)	£12.95
Combat Lynx	(Durrell)	£7.95

Commodore 64

1	(1)	Way of the Exploding Fist	(Melbourne House)	£9.95
2	(4)	Frankie goes to Hollywood	(Ocean)	£9.95
3	(2)	Hypersports	(Imagine)	£7.95
4	(3)	Elite	(Firebird/Acornsoft)	£14.95
5	(–)	Tour de France	(Activision)	£9.95
6	(1)	Mr Do	(Datasoft/US Gold)	£9.95
7	(–)	Nick Faldo Plays the Open	(Mind Games)	£9.95
8	(3)	Rockford's Riot/Boulderdash	(Monolith)	£9.95
9	(5)	Fourth Protocol	(Hutchinson)	£12.95
10	(9)	Soft Aid	(Various Artists)	£4.95

Bubbling Under

Pitstop II	(Epyx/US Gold)	£9.95
Great American Road Race	(Activision)	£9.95

Spectrum

1	(1)	Frank Bruno's Boxing	(Elite)	£6.95
2	(2)	Hypersports	(Imagine)	£7.95
3	(3)	Highway Encounter	(Vortex)	£7.95
4	(–)	Frankie goes to Hollywood	(Ocean)	£9.95
5	(4)	Dynamite Dan	(Mirrorsoft)	£6.95
6	(6)	Glass	(Quicksilva)	£7.95
7	(8)	Soft Aid	(Various Artists)	£4.95
8	(3)	Nick Faldo Plays the Open	(Mind Games)	£9.95
9	(–)	Dambusters	(Sydney/US Gold)	£9.95
10	(–)	Spy vs Spy	(Beyond)	£9.95

Bubbling Under

Fourth Protocol	(Hutchinson)	£12.95
Rocco	(Gremlin)	£7.95

All figures compiled by Ram/C

Top Twenty

1	(1)	Hypersports *(Spectrum/C64)*	**Imagine**
2	(3)	Frank Bruno's Boxing *(Spectrum)*	**Elite**
3	(2)	Way of the Exploding Fist *(C64)*	**Melbourne House**
4	(4)	Frankie Goes to Hollywood *(Spectrum/C64)*	**Ocean**
5	(7)	Nick Faldo Plays the Open *(Spectrum/C64)*	**Mind Games**
6	(6)	Soft Aid *(Spectrum/C64)*	**Various Artists**
7	(16)	Highway Encounter *(Spectrum)*	**Vortex**
8	(14)	Dynamite Dan *(Spectrum)*	**Mirrorsoft**
9	(5)	Elite *(C64/BBC/Electron)*	**Firebird/Acornsoft**
10	(6)	Fourth Protocol *(Spectrum/C64)*	**Hutchinson**
11	(–)	Tour de France *(Spectrum/C64)*	**Activision**
12	(8)	Red Moon *(Spectrum/C64/BBC/Electron/Amstrad)*	**Level 9**
13	(15)	Glass *(Spectrum)*	**Quicksilva**
14	(17)	Mr Do *(Spectrum/Atari)*	**Datasoft/US Gold**
15	(–)	Dambusters *(Spectrum/C64)*	**Sydney/US Gold**
16	(13)	Rockford's Riot/Boulderdash *(C64)*	**Monolith**
17	(19)	Spy vs Spy *(Spectrum/C64)*	**Beyond**
18	(–)	Beach-head *(Spectrum/C64/BBC/Amstrad/Atari)*	**Access/US Gold**
19	(11)	Dun Darach *(Spectrum/Amstrad)*	**Gargoyle**
20	(–)	Great American Road Race *(C64)*	**Activision**

Figures compiled by Ram/C

Readers' Chart No 38

1	(4)	Soft Aid (Spectrum/C64)	**Various Artists**
2	(1)	Elite (C64/BBC/Electron)	**Firebird/Acornsoft**
3	(2)	Hypersports (Spectrum)	**Imagine**
4	(3)	Way of the Exploding Fist (C64)	**Melbourne House**
5	(5)	Dun Darach (Spectrum/Amstrad)	**Gargoyle**
6	(6)	Shadowfire (Spectrum/C64)	**Beyond**
7	(–)	Frank Bruno's Boxing (Spectrum)	**Elite**
8	(9)	Spy vs Spy (Spectrum/C64)	**Beyond**
9=	(7)	Revs (BBC)	**Acornsoft**
9=	(–)	Dynamite Dan (Spectrum)	**Mirrorsoft**

Winning phrase No 38: "Acorn due at hades" from David Blackledge, of Bolton, who receives £25. Runners up: "Rail station chef dead" from John Brownhill of Milton Keynes and "Dial 'D' for death" from R Robertson of Mossend, Lanarkshire

Now voting on week 40 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 40 closes at 2pm on Wednesday August 28 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name ....

Address ....

....

....

My top 3: Voting Week 40

1 ....

2 ....

3 ....

My phrase is: ....

New Releases

CHOCS AWAY

Dam Busters on the Spectrum is a surprisingly good impersonation of the game originally released on the Commodore

The game simulates the attack on the Moehne, Eder and Scorp dams by a flight of Lancasters carrying the most Monty Pythonesque weapon of war ever invented, the bouncing bomb.

The challenge consists not only of piloting the plane using an icon like system to adjust levels of throttles, power boost, flaps etc, but manning every other key site on the plane where appropriate – the bomb bay, rear gunner and front gunner

The full mission consists of successfully taking off from RAF Scampton, through flak, avoiding baddie planes and eventually blowing the dam to bits

All the controls are presented in close-up as separate screens which adds to the realism but does mean shunting around a lot For me the balance between blasting and flying is about right – the Lancaster isn't horrendously difficult to fly but neither is it a bland up-down-left-right arcade zap The landscape graphics are nothing too special but are good enough for a sense of atmosphere to be maintained

One of the better flying efforts

Program *The Dam Busters*
Price *£9 95*
Micro *Spectrum*
Supplier *US Gold*
Unit 10
Parkway Industrial Estate
Birmingham
B7 4LY

RIPPING YARN

Here's weird. In Ireland there really exists a school especially designed for women who want to pretend to be schoolgirls Schoolgirls of the type found in all the best *Girls Own* annuals

It involves much dressing up and having a ripping time being terribly naughty and having midnight feasts in the dorm

People pay money for a week or so of this, and I suppose it's no stranger than, say pretending to be a wizard or elf on an adventure weekend

Anyway the ethos of the school has been captured in a graphics adventure written with the *Quill* and *Illustrator* You play Trixie Trinian and along with your friends Fiona and Cynthia investigate the strange goings on at St Brides School Yes there are strange goings on (other than merely the fact that grown women pretend to be schoolgirls) – there is a mystery

Of the nature of the mystery and the way you solve it I can say little, except that it helps if you can convince the teachers you are one of them.

Though slow to be drawn, the relatively simple graphics are effective and add to the atmosphere – all musty school rooms and endless hallways The descriptions seem good too and I found myself well hooked

However whilst getting on reasonably well with the absolutely whizzo adventure of the secret of St Brides I now discover that the ultimate task is to find an amulet which lurks in locations that I, as a wet-behind-the-ears new chap, stand absolutely no chance with.

Nothing technically clever about the game given that it's all *Quilled*, obviously, but it seems very entertaining, it has a lot of tongue in cheek humour, I can also think of a lot of macho Orc-slaying adventures who could do a lot worse than playing this game

Program *The Secret of St Brides*
Price *£5 95*
Micro *Spectrum/C64*
Supplier *St Brides School*
Burtonport
County Donegal
Ireland

BURN UP

Speed King is one of the more interesting bike race games I've seen in a long while. Its strength is that, whilst there is a level of authenticity about its presentation of 10 world famous circuits on a Suzuki, it is easy to get going and a lot of fun to play

All controls are through the joystick and fire button, including gear changes, acceleration and leaning left and right around the corners (watch the way the rider puts his foot out) There are plenty of other riders on the track, although it was a long time before I saw much of them after the start of the race

The graphics are excellent with the sense of distance being achieved far more realistically than in most similar games – the way you start to approach the other bikes is extremely smooth

It feels fast and beats hands down most of the *Pole Position* variants that are around.

Program *Speed King*
Price *£8 95*
Micro *Commodore 64*
Supplier *Digital Integration*
Watchmoor Centre
Watchmoor Road
Camberley
Surrey GU15 3AJ

This Week

Program	Type	Micro	Price	Supplier
Warlord	Ad	Amstrad	£7 95	Interceptor
Everyone's a Wally	Arc	Amstrad	£9 95	Micro Gen
Scrabble	S	Amstrad	£9 95	Leisure Genius
Steve Davies Snooker	S	Amstrad	12 95	CDS
English Word Usage	Ed	BBC	£9 95	Kosmos
Steve Davies Snooker	S	C16	£7 95	CDS
Cylu	Arc	Commodore 64	£2.50	Firebird
Natural History	Ed	Commodore 64	£3.95	Kosmos
Steve Davies Snooker	S	Commodore 64	£8 95	CDS
Eldon	Ad	MSX	£4 95	Orpheus
Murder in the Manor	Ad	MSX	£9 95	P Morgan
Treasure Isle	Ad	MSX	£9 95	P Morgan
Alpha Blaster	Arc	MSX	£8 95	ML
Board Games I	Arc	MSX	£4 95	Orpheus
Board Games II	Arc	MSX	£4.95	Orpheus
Jet Fighter	Arc	MSX	£14 95	P Morgan
Scramble	Arc	MSX	£9 95	ML
Space Busters	Arc	MSX	£8 95	ML
Question of Sport	Ed	MSX	£9.95	P Morgan
Maths	S	MSX	£9.95	P Morgan
Software Manager	S	MSX	£9 95	P Morgan
Super League	S	MSX	£9 95	P Morgan
Music Maker	Ut	MSX	£9 95	P Morgan
Eldon	Ad	Spectrum	£8 95	Orpheus
London Adventure	Ad	Spectrum	£2 50	Firebird

Pick of the week

DOCTOR IN CHARGE

According to Sinclair the QL microdrives are absolutely fine, wonderful and a big step forward over floppy discs – this is true if you accept the concept that saving and loading data is not actually the point of microdrives. The point of microdrives is only to be very very small

Having just lost 350 words of an article I had foolishly typed on *Quill* and saved to microdrive I was in a desperate but appropriate condition to examine *Cartridge Doctor* from Talent Computer Systems Probably the most vital utility non-disc drive owning QL users could buy

It's that blank *bad* or *changed medium* that rankles – it's so smug well you certainly don't expect me to try and load anything from that do you,' it seems to say And what does *changed medium* mean? I always have visions of some sneaky QL-hater taking bits of tape out of microdrives and replacing it with some strange unexpected material like sticky tape or elastoplast

Anyway *Cartridge Doctor* managed to recover nearly half of my lost article, not such that I could load it back into *Quill*, but at least so that I could read it on screen It's extremely easy to use – most processes are automatic and most options have defaults for the most common choices

It works like this You load the *Doctor* into the QL then choose microdrives for the source microdrive and destination microdrive (if it's to make a new file)

The most common option is *Autoclone* which reads all the files on the microdrive assessing their condition.

Some may be pronounced 'good' which means they can be completely recovered and transferred to a new tape Others may be found to have one or more doubtful blocks of information

Files with doubtful blocks may then be patched, a process where each block is loaded up on to screen where it may be corrected manually, rather like wordprocessing – you move a cursor around deleting characters, etc

It doesn't seem to be one hundred per cent reliable though Some blocks of my *Quill* data proved to be screens full of question marks (maybe I was drunk when I wrote it) but basically my conclusion is simple QL owners must buy this program

Program *Cartridge Doctor*
Price *£14 95*
Micro *QL*
Supplier *Talent Computer Systems*
Curran Building
101 St James Road
Glasgow G5 0NS

SWASHBUCKLING

Robin of Sherwood features some of the slickest graphics I've ever seen in a game of this kind

If you persevere through the difficult opening section there is an absolutely stunning screen of a waterfall

But first you must release Robin and friends trapped in a cell awaiting a stiff talking to for venison highjacking Getting out of the cell is very complex indeed (although to be fair it's exactly how it would happen in a swashbuckling film)

The actual myth of Robin seems to need little embellishment to turn it into the classic adventuring saga – and I found this the most gripping adventure I've seen for ages

Program *Robin of Sherwood*
Price *£9.95*
Micro *Spectrum*
Supplier *Adventure Int.*
85 New Summer Street
Birmingham

WORD PLAY

Some Spectrum owners and not a few Commodore fans would vote, finally, for *Scrabble* as their favourite game on their computer

It's something to do with the seeming artificial intelligence involved, with the sense that you are challenging the machine with what humans are supposed to be best at, ie, word skills It helps, of course, that even as a board game it's superbly addictive

Good news for Amstrad owners then that *Scrabble* is at last available on the machines It's a fine implementation and, because of the Amstrad monitor, it's the clearest of all the versions

The vocabulary of 11,000 words gives you a difficult game at the harder levels I think a reasonably committed *Scrabble* player should win more often than not, but never easily

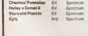
Computer *Scrabble* has one major additional virtue for kids – if anything is going to persuade your parents to buy a computer this game is it – drag them into a shop and make them play it

Program *Scrabble*
Price *£9 95*
Micro *Amstrad*
Supplier *Leisure Genius*
3 Montagu Row
London W1E 1EZ

This Week

Robin of Sherwood	Ad	Spectrum	£9 95	Adventure Int
Arithmetic	Ed	Spectrum	£9 95	Kosmos
Astrolab	Ed	Spectrum	£6.95	Eclipse
Chemical Formulae	Ed	Spectrum	£6 90	Eclipse
Halley s Comet II	Ed	Spectrum	£6 95	Eclipse
Stars and Planets	Ed	Spectrum	£7.95	Eclipse
Cylu	Arc	Spectrum	£2.50	Firebird





Key: **Ad** – adventure **S** – strategy simulation
Arc – arcade **Ut** – Utility
Ed – education

Adventure Int, 119 John Bright Street Birmingham B1 1BE, 021 643 5102 **CDS,** Silver St Doncaster **Eclipse,** 79 Ardrossan Gardens, Worcester Park Surrey KT4 7AX 01 330 3116 **Firebird,** Wellington House Upper St Martin s Lane London WC2H 9DL, 01 379 6755 **Interceptor,** Interceptor Micro s Lindon House The Green Tadley Hampshire 07536 7145 **Kosmos,** 1 Pilgrims Close Harlington, Dunstable Bedfordshire LU5 6LX **Leisure Genius,** 3 Montagu Row London W1H 1AB 01 935 4522 **ML,** ML Services 33 Shelgate Road London SW11 1BA England 01 228 6730 **Micro Gen,** 44 The Broadway Bracknell Berks 0344 427317 **Orpheus,** The Smithy Unit 1 Church Farm Hatley St George Nr Sandy Beds SG19 3UP 0767 5481 **P Morgan** 230 Dunvant Road Dunvant Swansea W Glam SA2 7SR

Survival plan

An article published recently on the evolution of fifth generation computers explained how these machines will probably be able to do more or less anything we ask them to.

How many times have you read something similar? Yet somewhere under the words, a rather bizarre confusion of ideas seems to be lurking.

On the one hand there is the metaphor of evolution and everything that suggests in the way of raw Darwinian struggle, blood-stained teeth the triumph of those best suited to survive, and so on. The tough and ugly face of Nature at its nastiest, as the generations of creatures pit themselves against the brutality of the real world that their creator – or blind chance – condemned them to live in.

Yet for some reason – maybe not unlinked to the desire to sound portentous – this word has become applied to the development by thoughtful, caring humans of willingly servile computers, happy apparently to obey our every whim. The fantasy is given classic form by science-fiction writer Isaac Asunov and his silly-solemn Laws of Robotics – the first and greatest of which is that no robot may ever harm a human being. (And can you really see the military supremos of either superpower keeping to that kind of rule?)

What a contrast between the two ideas.

Can you imagine any species struggling to evolve into a race of servile fools? Even the most docile herbivores, even the blindest and most wretched among liver-flukes, have more independence. Their existence may not be particularly dignified, but at least they retain some small area of self to call their own. The lamb may trot obediently to the slaughter, but at least it can choose whether to bleat when it sees the knife.

A computer, though, is always the prisoner of its program, and in turn the program of its author. Even the most open-ended of flexible expert systems, though capable perhaps of many nifty tricks, and of deductions unsuspected by its designer, cannot go beyond its brief – cannot turn away from its set purpose to do something more interesting or something more important, or even something utterly vital to its survival.

For a species actually to evolve in any real sense of the word, surely it needs at least this degree of independence? Plus a capacity to protect itself (whether by teeth or camouflage), a talent for adaptation and the ability to breed. How many of these has your Spectrum Plus got?

But of course it would be rather fascinating to see machines genuinely evolving. And by no means beyond the scope of possibility. All you'll need to arrange would be a robot with a good sized computer for memory, an easily available and re-chargeable power source, sensors so that it could decipher its environment, motor ability, and enough manual dexterity to assemble others of its kind. It would also need to have, programmed deep into its hardware, at the same fundamental level that modern machines are compelled to follow the paths of strictest logic, a will towards an effective independence of Man, (though it would need to be symbiotic with him). Useful talents might include the ability to forage for materials, to think creatively, handle a sawn-off shotgun, locate unprotected sub-post-offices, evade the police, hide out in the Welsh hills, etc.

Just a few generations of these beasts, and we'd see some genuine evolution. The results would undoubtedly be fascinating.

Mind you, there could be disadvantages.

George Simmers

Down on the farm

Puzzle No 171

When old farmer Jorkins died he left his entire estate to be divided equally between his two sons. This was done quite satisfactorily except for just one rectangular field. This was a bit of a curiosity as the old man specified that the field was to be divided in half diagonally, from corner to corner.

However, there was a method in the madness. If the field was divided in this way each piece of land would have sides that were all an exact number of yards in length. Further both sons would each receive 666 666 square yards in area. Can you find the dimensions of the field?

Solution to puzzle No 166a

Of the 5040 possible combinations that can be formed with the seven cards, 576 of them are divisible by eleven. This reduces to 4 chances in 35 – slightly better odds than the 1 in 11 chance anticipated.

```
10 LET YES=0:LET NO=0
20 FOR A=1 TO 7
25 PRINT A
30 FOR B=1 TO 7
40 IF A=B THEN GOTO 220
50 FOR C=1 TO 7
60 IF A=C OR B=C THEN GOTO 210
70 FOR D=1 TO 7
80 IF A=D OR B=D OR C=D THEN GOTO 200
90 FOR E=1 TO 7
100 IF A=E OR B=E OR C=E OR D=E THEN GOTO 190
110 FOR F=1 TO 7
120 IF A=F OR B=F OR C=F OR D=F OR E=F THEN GOTO 180
130 FOR G=1 TO 7
140 IF A=G OR B=G OR C=G OR D=G OR E=G OR F=G THEN
    GOTO 170
150 LET N=A*1000000+B*100000+C*10000+D*1000+E*100+
    F*10+G
160 IF N/11=INT(N/11)THEN LET YES=YES+1 ELSE NO=NO+1
170 NEXT G
180 NEXT F
190 NEXT E
200 NEXT D
210 NEXT C
220 NEXT B
230 NEXT A
240 CLS:PRINT "YES=";YES "NO=";NO
```

The program generates all possible combinations of the seven digits, 1 to 7, with no digit repeated and checks each to determine if it is an exact multiple of eleven.

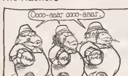
Winner of Puzzle 166

The winner is Sam Nash of Leeds, West Yorkshire, who receives a prize of £10.

Rules

The closing date for Puzzle 171 is September 18.

The Hackers





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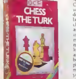


Video Pool 48K Spectrum £5.95

A highly sophisticated simulation of the game of pool guaranteed to test your skill and judgement to the limit. The smooth flicker free movement of the balls, accurate calculation of the angles and speed make this the best version of pool available for the Spectrum.

Casino Royal 48K Spectrum £5.95

Roulette and Pontoon are the classic games featured with all the atmosphere of the real thing with the Currah Microspeech facility. Roulette is for up to six players. Full table layout with superb wheel action. Teaches you roulette and maybe will help you to win a fortune!
Pontoon also known as Blackjack is just you and the bank. Superb graphics, and a pot of money is all you need to give hours of endless fascination.



Another classic winner from OCP is CHESS — THE TURK which is very popular and deservedly so since it was launched. Probably the best chess game for the Spectrum around. Outstanding features include: Blitz chess. Demo mode. Replay. Edit/set up. List moves to screen and printer, line print the board, save moves and board, load moves and board. There are six levels of play and all the normal chess moves are made with ease. If you can't beat em — join em in other words you can use the HELP key! A bargain at £5.95



77a Packhorse Road, Gerrards Cross, Bucks. Tel: (0753) 888866

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